Introducing an Information Seeking Skill in a School Library to Students with Autism: Using Video Modeling and Least-to-Most Prompts

A Dissertation

Submitted to the Faculty of

Drexel University

by

Patricia T. Markey

in partial fulfillment of the

requirements for the degree

of

Doctor of Education

October 2014

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Dedication

I would like to dedicate this work to the wonderful students who were a part of this research project. Their enthusiasm, willingness to learn, and to take chances are inspiring. I am grateful to have had this opportunity to get to know them better.

I would also like to dedicate this to the educators whose devotion, compassion, and kindness have an extraordinary impact on their students' success in both their educational pursuits and their personal lives.

Acknowledgements

I would like to express my deepest appreciation to my dissertation chairperson, Dr. Michel Miller O'Neal, who generously shared her time and knowledge of Special Education issues; her encouragement and guidance were invaluable. I am sure I would not have been successful without her expert advice and constructive feedback throughout the dissertation process. I would also like to thank my committee members, Dr. Delia Neuman and Dr. Constance Lyttle, for their suggestions, expertise, and support in this endeavor.

In addition, I would like to acknowledge the hard work and professionalism of Dr. Kristen Betts and Dr. Joyce Pittman, who dedicated their time and energy to making the Ed.D. in *Educational Leadership and Management* an outstanding educational program.

I wish to thank everyone in Drexel's "Philadelphia Cohort 1" for their friendship and support. Your willingness to "share your stories" made what could have been a difficult process an enjoyable experience instead. It has been wonderful getting to know all of you - Issa, John, Heather, Amy, Debbie, Ferne, Jen, Carl, Jon, Brian, Rachel, Scott, Rick, Brett, and Warren.

I want to acknowledge the Special Education teachers and staff who graciously shared their time and expertise to help make this research project a success. Their enthusiasm and assistance in providing access to their students was instrumental, making this an enjoyable and worthwhile experience for all. Helene, Kristina, Tracy, Erin, Ryan, and Tracey - your collaboration and professionalism are greatly appreciated.

To my friends and colleagues in the library field – especially Pam, Kelly, and Mike - I want to extend a warm and grateful thank you. Your expertise, suggestions, and encouragement were extremely helpful and are deeply appreciated.

A special thank you to family, friends, and colleagues who motivated me to continue by providing professional advice, a sympathetic ear, and the occasional laugh when I needed it the most. Addie, Dori, Elaine, Heidi, Jane, John, Karin, Lori, Marianne, Maureen, Nancy, Sheila, and Susan - I am glad you are a part of my life.

And finally, I want to thank my husband Shawn and my son Shawn, Jr., for your constant reassurances and nourishment (both physical and spiritual), which gave me the determination and stamina to complete this doctoral degree. I appreciate your patience and the countless number of sacrifices you made in order to make this dream become a reality. I love you both with all my heart!

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Abstract
Introducing an Information Seeking Skill in a School Library to Students with Autism: Using Video Modeling and Most-to-Least Prompts
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Between the years 2002 and 2010, the identification of individuals diagnosed with autism spectrum disorders (ASD) increased by more than 123% according to the Autism and Developmental Disabilities Monitoring (ADDM) Network. Recent estimates report that one in 68 children has been diagnosed with autism, with ASD affecting one in 42 boys and one in 189 girls (CDC, 2014). The purpose of this case study was to determine the effectiveness of a video peer modeling and least-to-most prompting intervention targeting the instructional delivery of an information literacy skill to students with ASD in the school library setting. Research studies have evaluated the effectiveness of video modeling procedures in the acquisition of social initiation, conversational skills, perspective-taking, appropriate play, and functional skills. However, the literature is limited on the effects of video modeling with least-to-most prompting on the acquisition of academic skills in library instructional programs. This research study is significant due to the rapid increase in the identification of students with autism spectrum disorders and current inclusionary practices in both the general education and library classrooms. This single-subject, multiple case study design utilized a descriptive approach to measure baseline, video peer-modeling intervention, and withdrawal phases for the acquisition of skills by five middle school students with autism spectrum disorder in accessing an online computer card catalog to locate a library book in the school collection. The primary question this research study sought to answer was: How does the use of video modeling accompanied by least-to-most prompting affect the acquisition of library information skills in students with autism spectrum disorder (ASD)? The results suggest that video modeling with least-to-most prompting was

successful in teaching the five participants to access the online library card catalog to help them select books for academic and leisure activities. The video modeling intervention effectively facilitated the acquisition of the targeted skill for all of the study participants. Each participant was able to acquire the skills needed to complete the task independently with fading of least-to-most prompts within four to twelve sessions. Findings from the current study regarding the efficacy of video modeling intervention add to the literature on the utilization of video modeling procedures in improving academic skills in students with ASD. Results can also be used to strengthen existing educational programs and services for children with ASD in library instructional programs.

Keywords: academic skills, autism spectrum disorder, inclusion, instructional strategies, intervention, least-to-most prompting, school library, social learning, video modeling, video peer-modeling

Chapter 1: Introduction and Background

Introduction

Librarians strive to make library facilities welcoming, inclusive, and engaging places for all patrons. Guidelines set forth by the American Library Association (ALA), such as the Library Bill of Rights (1939, 1996) and the School Library Bill of Rights (1955, 2000), outline the responsibilities of the librarian in shaping programs and access to resources for their students and patrons (ALA, 1996, Booth, 2008). According to the School Library Bill of Rights, "…school library media specialists assume a leadership role in promoting the principles of intellectual freedom within the school by providing resources and services that create and sustain an atmosphere of free inquiry" (Intellectual Freedom Manual, 2010, p. 91).

In interpreting these documents in regards to providing services to persons with disabilities, librarians have been charged with the responsibility to be proactive in reaching out to persons with disabilities and in facilitating the equitable availability of resources and services for all library users (ALA, 2009a, 2014a). At the 2009 American Library Association Midwinter Meeting, the ALA Council acted upon the recommendation of the Council Intellectual Freedom Committee by adopting Policy 53.1.2, which is a new interpretation of the Library Bill of Rights on Services to Persons with Disabilities (ALA, 2009a). This interpretation states in part, "A person's right to use the library should not be denied or abridged because of disabilities.... when information in libraries is not presented in formats that are accessible to all users, discriminatory barriers are created." However, implementing these mandates presents challenges which include the growing need for professional development provided to assist librarians in recognizing and meeting the needs of persons with disabilities (Farmer, 2013; Gavigan & Kurtts, 2009; Gibson, 1977; Gorman, 2004; Hopkins, 2004; Murray, 2000b, 2000c; Subramaniam, Oxley, & Kodama,

2013; Whelan, 2009). The demand for training is evident in special education programs initiated by professional librarians, to provide support and training to their staff (Adams, 2006; Applin, 2003; Katz, 2009; Ludke, 2002; Vaccarella, 2001; Whelan, 2009). Many librarians have expressed a need for more formalized instruction provided by Library and Information Science programs during pre-service, in order to prepare them to optimize resources and services for patrons with disabilities (Berry, 1998; Katz, 2009; Olesh 1998; Walling, 2004; Whelan, 2009).

Data collected by the U. S. Bureau of the Census in 2010 indicates that there are 56.7 million American persons identified with communication, physical, or cognitive disabilities (United States Census Bureau, 2012). This figure represents 18.7 percent of the population in the United States. Of this group, 15.2 million people, or 6.3 percent, were reported with cognitive, mental, and emotional functioning disabilities, including 3.4 million children receiving special educational services (Brault, 2012). An estimated 3.5 million Americans have been diagnosed with autism spectrum disorder (ASD), including approximately nine to 13 percent of the 49.8 million children enrolled in public schools (Brault, 2012; Buescher, Cidav, Knapp, & Mandell, 2014; National Center for Educational Statistics [NCES], 2014). In the 2011 school year, the number of three to 21-year-olds classified as having ASD and receiving public school special education services grew to 455,000 (NCES, 2014). This was an increase from the 22,664 students with ASD enrolled in special education programs in 1994 and the 94,000 enrolled in special education programs in 2000 (CDC, 2014, NCES, 2014).

Several laws passed by Congress have had a major impact on how persons with special needs are educated in schools and on the services they receive in library media centers. The Rehabilitation Act of 1973: Section 504, states that any recipient of federal financial aid (i.e., educational agencies, schools) must end discrimination in the offering of its services to

individuals with disabilities (Rehabilitation Act of 1973 [REHABACT], n.d.). In 1975, President Gerald Ford signed Public Law 94-142, or The Education for All Handicapped Children Act, which provided for "equal access to high-quality education" (U. S. Department of Education [USDEP], 2007). At the time the law was enacted, Ford expressed concern that this law would "unrealistically raise the expectations of those affected" and that it would become another "unfunded mandate" due to the high costs associated with it (Itkonen, 2007; State-Federal Education Policy, 2012). This federal law was the first to guarantee a free, appropriate public education to each child with a disability in the United States. It targeted over one million children with disabilities who had previously received no educational services and students who were receiving limited services due to their disabilities. The students receiving limited services made up more than half of all children with disabilities in the United States in 1975 (Compliance Assistance by Law, 2010; Itknoen, 2007; USDEP, 2007).

In 1990, The Education for All Handicapped Children Act was renamed the Individuals with Disabilities Education Act (IDEA). The renaming of the act was done to highlight the identification of the person before the disability. Amendments to IDEA (1997) emphasized not just access to equal education, but also the quality of the educational services being received by persons with disabilities (IDEA, 2009; Indicator 6, 2010; Itkonen, 2007; USDEP, 2007). The American with Disabilities Act (ADA), signed into law in 1990, requires that persons with a disability are provided equal access to education, employment, and other public services (United States Department of Labor, 2014). This law applies to all entities in the United States except for churches and private clubs.

In order to cover excess state and school district costs associated with implementing this special education policy, the federal government agreed to pay 40 percent of these costs.

However, IDEA has not been fully funded by the federal government, as promised. In 2008, the federal contribution to special education spending was 17 percent of the actual cost with the shortfall being assumed by the states and local school districts. IDEA federal funding was substantially increased in the fiscal year (FY) 2009, with additional funds through the American Recovery and Reinvestment Act covering 33 percent of the cost. Due to sequestration, or the suspension of budgetary resources in FY2013, a five percent across-the-board funding cut was imposed, with a reduction in funding to educational programs of approximately $2.8 billion dollars. For FY2014, IDEA federal funding was increased to $11.5 billion dollars, which covered 16 percent of the cost of educating children with disabilities, increasing the amount from the previous year but still $82 million dollars below the pre-sequester level in FY2012 (Federal Allocations for Special Education, 2014; National School Boards Association [NSBA], 2014; NCES, 2014).

Problem Statement

In recent years, educators have seen an exponential increase in the identification of students diagnosed with autism spectrum disorders (ASD). The fourth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV-TR) provided definitions and diagnostic criteria for ASD that identified distinct disorders, including: Autism, Asperger's Syndrome, Pervasive Developmental Disorder–Not Otherwise Specified, and two autism-related conditions, Childhood Disintegrative Disorder and Retts Syndrome. The fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5), published in 2013, provides revised diagnostic criteria for ASD. The separate diagnostic labels identified in DSM-IV-TR now fall under the umbrella term of "Autism Spectrum Disorder," with further distinctions made according to the severity level of the disorder (American Psychiatric Association, 2014; Autism Research

Institute, 2014; CDC, 2014). Because this research study was conducted while the DSM-IV-TR diagnostic categories were in effect, and because the study participants were formally diagnosed prior to the changes in the *Diagnostic and Statistical Manual,* DSM-IV-TR categories and definitions will be used in this document.

In a report issued by the Center for Disease Control and Prevention (CDC, 2014), it is noted that autism affects 1 in 68 children, with ASD more frequently diagnosed in boys (1 in 42) than girls (1 in 189). This number is an increase of over 1,000 percent in the last 40 years (CDC, 2014; Autism Speaks, 2014). With increases such as this, and the common practice of the majority of students with ASD attending public schools, librarians must find ways to provide both physical accessibility and effective instructional services to their patrons with disabilities (Hopkins, 2005; NCES, 2014; Wesson & Keefe, 1995).

Librarians must master effective, evidence-based instructional practices that require minimal time, experience, and effort to implement in order to deal effectively with students with ASD. This approach will enable school librarians to become proactive, rather than reactive, in establishing effective inclusionary programs for their patrons with special needs. These strategies will lead to library media instructional programs capable of meeting the mandates set forth in the laws enacted to assure equal access for all library users. They will empower school librarians by offering educational strategies to deliver equitable and differentiated instructional services to all students. They will allow school librarians to be more effective in providing information and resources to Special and Regular Education teachers to enhance their curriculum and instructional delivery to students with special needs. And most importantly, they will allow individuals with ASD to feel welcome in the library and successful in their academic pursuits.

Purpose and Significance

The purpose of this case study was to determine the effectiveness of a video peer-modeling intervention accompanied by least-to-most prompting targeting literacy skills instructional delivery to students with ASD in the school library setting. Using a single-subject, multiple case study approach, this research explored the effectiveness of using a peer video model to instruct students with ASD in library and information seeking skills. Students with ASD were observed in the context of a library setting and in their regular classrooms (1) to explore their usage of library resources and (2) to determine how this instructional approach used by the librarian affected the outcomes and experiences on the part of students with ASD.

Research was conducted to determine student perceptions of the effectiveness of video modeling with least-to-most prompting instructional techniques. A survey was conducted to gather qualitative evidence from student participants to evaluate the students' satisfaction levels in participating in the intervention activities and their self-reported acquisition of information skills using this learning method.

This research is of great significance due to the rapid increase in the identification of students needing special education services. Today, it is estimated that one in every 68 children is diagnosed with autism, making it more common than childhood cancer, juvenile diabetes and pediatric AIDS combined (CDC, 2014). An estimated 3.5 million individuals in the U.S. and tens of millions worldwide are affected by autism (Buescher et al., 2014). Government statistics suggest the prevalence rate of autism is increasing 10-17 percent annually. There is no established explanation for this increase, although improved diagnosis and environmental influences are two reasons often considered (Autism Speaks, 2014; CDC, 2014). It has been shown that persons with physical and developmental disabilities do not always feel comfortable

using the library and therefore do not make full use of the facilities. Students with autism spectrum disorder often have a difficult time communicating with others, fitting in socially, and working independently. Providing students with ASD with positive interactions in the library setting has been shown to build their self-esteem, confidence, and information literacy skills. Ultimately, growth in these areas can help students with ASD overcome social isolation (ALA, 2009a; Hopkins, 2004; Murray, 2000a, 2000b, 2000c).

During the 2011-2012 school year, 6.4 million children and young adults were identified as disabled and receiving special education services (NCES, 2014). This number includes 455,000 students identified with ASD enrolled in public schools in the United States. Of this group, 95 percent were enrolled in regular schools. Thirty-eight percent were taught in regular classroom environments for at least 80 percent of the school day. Another 18 percent spent 40 or more percent of their time in a regular classroom setting (NCES, 2014). Of the 6.4 million children receiving educational services under the Individuals with Disabilities Education Act (IDEA) seven percent, or approximately 455,000 students between the ages of six and 21, have been diagnosed with ASD. Ninety-one percent of students with ASD are educated in inclusionary settings, with 56 percent spending the majority of their school day in general education classrooms (CDC, 2014; NCES, 2014).

Although the American Library Association (ALA) offers some print and web-based support for patrons with autism, there is little in the way of courses designed specifically for librarians and their staff members on this topic (Whelan, 2009). The American Library Association lists 58 accredited schools of Library and Information Science in the United States. Of those institutions, 48 offer degrees in school library media (ALA, 2014c). Few of these programs require training to meet the needs of the patron with special needs (Hopkins, 2004;

Gavigan & Kurtts, 2009; Kurtts, personal communication, July 13, 2010).

Gavigan and Kurtts (2009) found that few LIS programs require courses that address special education and the patron with special needs. Core curriculum courses in the LIS program rarely include a special education focus. The North Carolina School of Library and Information Science and the University of Pittsburgh LIS program both include one course on special education in their Master of Library Science program. The authors found that only two schools, the University of North Carolina at Greensboro and Cal State Northridge, offer online Assistive Technologies certificate programs. These programs are highly regarded and open to all professionals interested in this topic but are not specifically tailored to the library media specialist.

The most recent research study done to evaluate Library and Information Science (LIS) program provision of education to pre-service librarians related to the Americans with Disabilities Act, services for people with disabilities, and the use of adaptive technologies to improve and enhance library services for people with disabilities was conducted more than ten years ago (Walling, 2004). The results of this study indicate a gap in special education training for librarians in public and school library settings. Only one previous study of ALA-accredited library school programs has been undertaken to examine coursework and training provided to prepare librarians in serving patrons with disabilities (Gibson, 1977). Due to the age of the Walling study (2004), the information provided may currently be inaccurate.

Drexel University's iSchool, College of Information Science and Technology, does require that students enrolled in their School Library Media program take two three-credit courses focusing on students with special needs. *Fundamentals of Special Education* and *The Inclusive Classroom* are required for students with no prior teaching certification who seek

certification as school librarians through the Pennsylvania Department of Education (Drexel University, 2013). Exploring other ALA-accredited schools offering the Masters in Library Science and Technology degree may show similar coursework requirements.

Bonnici, Maatta, and Wells (2009) conducted a national survey to determine the level of library services provided to patrons with disabilities. This is the first survey in 30 years that has looked at the quality of programs offered to patrons with special needs. Although the survey focused on library access to informational resources for the blind and persons with physical disabilities, questions also addressed library and information science training provided by ALA-accredited schools related to all disabilities. The authors indicate that this is the first survey to address the topic of library services provided to persons with disabilities using assistive technologies. They suggest that future research could aid librarians planning services to patrons with disabilities and could inform library educators in preparing LIS graduates to serve this population. Their findings echo the research done by Gavigan and Kurtts (2009), which found that the use of adaptive equipment and universal design of learning in curriculum-based instruction provided effective support for all learners.

Barnhill, Polloway, and Sumutka (2010) surveyed teacher educators at institutions of higher education (IHEs) in order to study programs training teachers to work with individuals with autism spectrum disorders. From the data collected, the researchers determined that there is a significant variance in the programs offered to pre-service teachers in autism spectrum disorder. Many of these differences can be traced to a lack of state and IHE guidelines for ASD program competencies. In addition to the need for more consistency in training programs, the authors recommend that teachers acquire the necessary skills to work with students with ASD through coursework in evidence-based and scientifically based interventions, active participation

in field experiences, and opportunities to practice the skills they have learned. Although this study focused on general education teaching programs, the lack of a cohesive special education coursework curriculum offered in LIS programs makes the findings of the present study significant for efforts to improve special education training in these programs.

Librarians in the United States and throughout the world have taken it upon themselves to design workshops and programs that address the methods to modify library skills programs, to adapt library services and resources, to identify students with special needs, and to help these students feel successful in their research pursuits and in achieving their learning goals (Applin, 2003; Kirkpatrick & Morgan, 2001; Murray, 2000a). The perceived gap in training and collaborative opportunities between special education teachers and school librarians, however, makes the need for effective instructional strategies imperative.

Research Questions

While conducting this action-oriented, single-subject, multiple case study research, data was collected in order to explore the following questions:

- How does the use of video peer modeling accompanied by least-to-most prompting affect the acquisition of library information skills in middle school students with autism spectrum disorder (ASD)?
- What are the perceptions of middle school students with ASD regarding using a video peer modeling intervention with least-to-most prompting in the library?

Definition of Terms

Adaptive technology

Adaptive technology refers to products that help people who cannot use regular versions of products, primarily people with physical disabilities such as limitations to vision, hearing, and mobility. (Gavigan & Kurtts, 2009).

Assistive technology

Assistive technology (AT) is a generic term that includes assistive, adaptive, and rehabilitative devices for people with disabilities and includes the process used in selecting, locating, and using them (Gavigan & Kurtts, 2009).

Autism Spectrum Disorder (ASD)

According to the diagnostic criteria set forth in the fourth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV-TR, 2000), ASD is group of developmental disabilities that can cause significant social, communication, and behavioral challenges. People with ASD process information differently than other people. ASD affects each person in different ways and can range from very mild to severe (CDC, 2014).

The DSM-IV-TR (Autism Research Institute, 2014) identifies the following types of autism spectrum disorders:

- **Autistic Disorder** (also called "classic" autism)

  This is what most people think of when hearing the word "autism." People with autistic disorder usually have significant language delays, social and communication challenges, and unusual behaviors and interests. Many people with autistic disorder also have intellectual disability.

- **Asperger Syndrome**

  People with Asperger Syndrome usually have some milder symptoms of autistic disorder. They might have social challenges and unusual behaviors and interests. However, they typically do not have problems with language or intellectual disability.

- **Childhood Degenerative Disorder**

  This is a rare condition in which children develop normally until at least two years of age but then demonstrate a severe loss of social, communication and other skills. Under DSM-IV-TR, it is grouped under the ASD category. However, unlike autism, a child with this disorder usually shows more severe regression of skills after several years of normal development.

- **Pervasive Developmental Disorder – Not Otherwise Specified** (PDD-NOS; also called "atypical autism")

  People who meet some, but not all, of the criteria for autistic disorder or Asperger Syndrome, may be diagnosed with PDD-NOS. People with PDD-NOS usually have fewer and milder symptoms than those with autistic disorder. The symptoms might cause only social and communication challenges.

- **Retts Syndrome**

  This rare genetic disorder affects the way the brain develops. It occurs almost exclusively in girls. Symptoms begin to develop at about six months and include problems with movement, coordination and communication that may affect the ability to use one's hands, communicate and walk.

According to the fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5), these types of ASD are now combined under "Autism Spectrum Disorder." The new

DSM-5 diagnostic criteria and definitions reflect a scientific consensus that the previously separate disorders are actually a single condition with different levels of symptom severity in two core domains. DSM-5 merges social communication and social interaction into one domain, and restricted or repetitive behaviors or interests, speech, use of language, and sensory difficulties into the second domain (American Psychiatric Association, 2014).

Developmental disabilities

A developmental disability is a severe, chronic disability that begins any time from birth through age 21 and is expected to last for a lifetime. Developmental disabilities may be cognitive, physical, or a combination of both. While not always visible, these disabilities can result in serious limitations in everyday activities of life, including self-care, communication, learning, mobility, or being able to work or live independently (CDC, 2014).

Inclusion

Special education inclusion signifies the participation of students with special needs in regular education classrooms and the provision of support services to these students. The main objective of inclusion education is that all students in a school, regardless of their strengths and their weaknesses in any area, become part of the school community (What are Special Needs?, 2010).

Least-to-Most Prompting

Prompts are defined as "extra or artificial" stimuli that are given to children to increase their ability to make correct responses. Initially, instruction is provided on the desired behavior or skill to be learned without prompts. If the student does not respond within a set amount of time, more help is given until the child makes the correct response. Least-to-most prompts are a sequence of cues that are given by an instructor beginning with minimal assistance and progressing to more support if needed. A common least-to-most prompting system includes

verbal prompts, gestures, modeling, and physical prompts (MacDuff, Krantz, & McClannahan, 2001).

Special education

Special education is the education of students with special needs in a way that addresses the students' individual differences and needs. Ideally, this process involves the individually planned and systematically monitored arrangement of teaching procedures, adapted equipment and materials, accessible settings, and other interventions designed to help learners with special needs achieve a higher level of personal self-sufficiency and success in school and community than would be available if the student were given access only to a typical classroom education (CDC, 2014).

Special needs

"Special needs" is an umbrella term underneath which a staggering array of diagnoses rests. Children with special needs may have physical disabilities, mild learning disabilities or profound mental retardation, food allergies or terminal illnesses, developmental delays that catch up quickly or remain entrenched, occasional panic attacks or serious psychiatric problems. The designation is useful for getting needed services, setting appropriate goals, and gaining understanding for a child and family (What are Special Needs?, 2010).

Universal design for learning

Universal Design for Learning (UDL) is a research-based framework for designing curricula—that is, educational goals, methods, materials, and assessments—that enable all individuals to gain knowledge, skills, and enthusiasm for learning. The approach simultaneously provides rich supports for learning and reducing barriers to the curriculum, while maintaining high achievement standards for all students (Gavigan & Kurtts, 2009).

Video Modeling

This is a strength-based instructional strategy, which focuses on a learner's strengths or talents rather than his or her weaknesses. It is an observational learning technique that uses a video demonstration of a targeted skill or task being performed by a "model" and then imitation of the behavior by the individual viewing the video. There are several video modeling perspectives: self, adult, peer, point-of-view, and mixed methods. Each of these formats has been shown to be successful as an intervention strategy for students with ASD (McCoy & Hermansen, 2007).

Assumptions, Limitations and Delimitations

Through the personal experience of this researcher and conversations with colleagues, buttressed by a review of the literature, an awareness of the gap in library services to students with ASD has been identified. It is assumed that national and international school libraries are experiencing similar phenomena. Individual students with ASD exhibit a variety of symptoms and ranges of cognitive abilities, and awareness of these differences should improve and inform school librarians' ability to modify information literacy training and offer differentiated instructional programs.

Although librarians in public, academic, and K-12 school libraries are all faced with the challenge of providing support and services for patrons with autism spectrum disorder, this action research study was limited to one school library program and the services offered by the library staff in this setting. It does not include academic or public libraries or international libraries, although these organizations are also experiencing the increased demands of servicing the needs of students with ASD. Only students who have been identified as having an autism spectrum disorder were included.

By limiting data collection and research to one school library, the study may have excluded valuable strategies that have been developed by public and academic librarians to improve interaction with individuals with ASD. Significant international studies that have identified innovative instructional approaches may add important and valuable information to this research.

Summary

Access to information and resources is making a difference in the lives of many students with disabilities, including students with ASD. Collaboration with other members of the special education team is cited as a positive factor in delivering satisfactory services and meeting the needs of students in special education programs within the school environment (Carmichael, 2007). Library media specialists, in partnership with special educators and other members of the community, can assist in expanding the educational opportunities available to all students by promoting and developing accessible school library programs. However, even with guidelines, it is often a struggle for librarians to meet such students' needs.

As the demand for support of patrons with ASD in the library and in educational settings increases, it is imperative that librarians are provided opportunities for collaboration with their special education colleagues in order to understand their patrons' needs and comply with the legal mandates set forth to deliver the appropriate access to information and instruction. Research into the effectiveness of evidence-based information literacy skills instruction provided to students with ASD should be examined. Feasibility and demand for other effective library services for patrons with special needs also warrants investigation. Furthermore, the effectiveness of training in special education within the library discipline should be assessed

against patrons' usage and comfort levels as well as their progress and success in educational and personal endeavors.

Chapter 2: Review of the Literature

Conceptual Framework

The following Inspiration© diagram is a graphic representation of the action research problem with the expected outcomes identified. If school library programs realign their curriculum to include innovative teaching strategies in literacy skills instruction for their students with autism spectrum disorder, students are likely to derive benefits from these improved services. This realignment involves collaboration with Special Education staff as well as librarian staff development and training in order to determine the most effective instructional techniques to enhance the educational experiences of students with ASD.

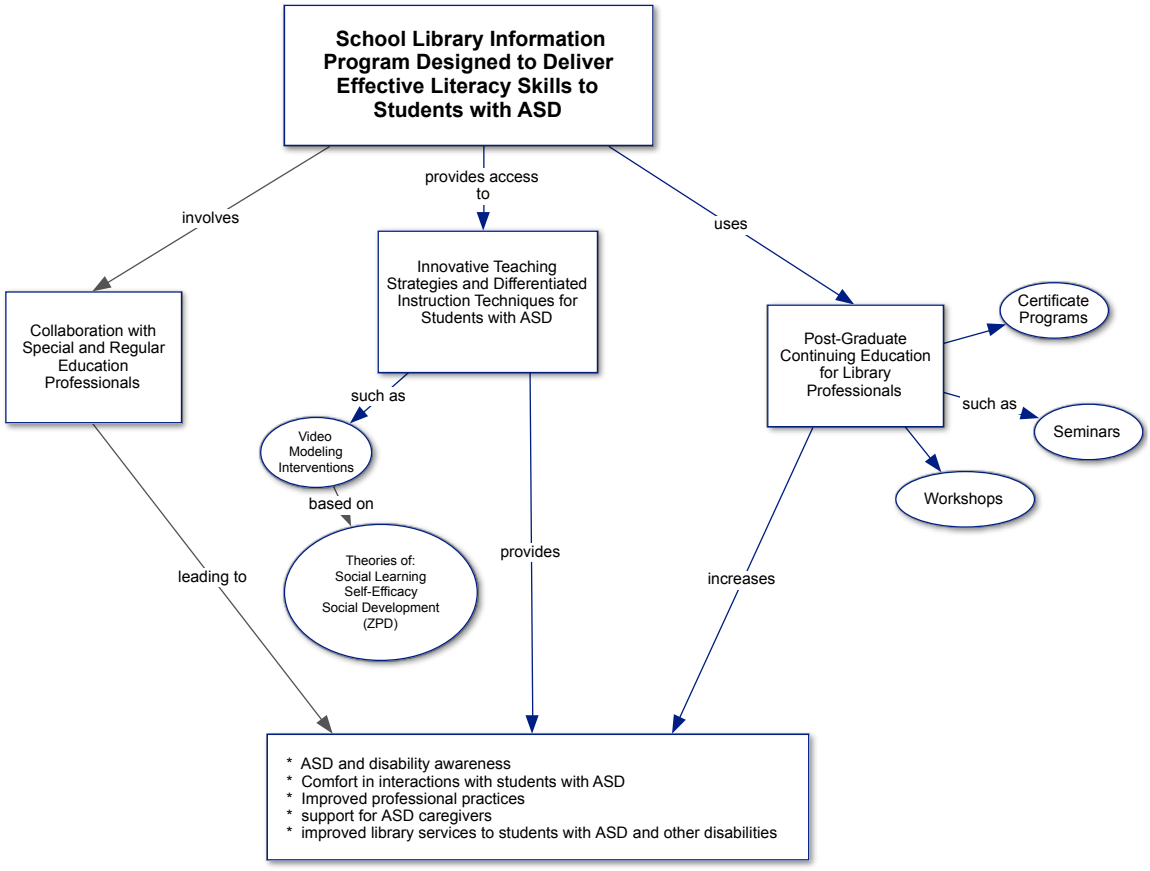

Figure 1. Concept Map

Problem Statement

The researcher sought to understand the effectiveness of video modeling intervention with least-to-most prompting strategies that could be used within school library programs in order to improve learning outcomes for students with autism spectrum disorders (ASD). Although there has been an increase in the number of students diagnosed with ASD, many school librarians have had limited training in implementing instruction which addresses the special characteristics and learning styles of students with ASD. Most experience in this area is obtained through on-the-job training and workshops initiated by the librarian or library administration in reaction to a perceived need. Unfortunately, if librarians are unable to implement effective instructional strategies to meet the needs of all students in special education, they will not be in compliance with federal laws or American Library Association policies (ALA, 1996, 2009b, 2014b; IDEA, 2009; U.S. Department of Labor-ADA, 2014). They will also be unable to provide a welcoming, inclusive, and engaging place to experience enhanced learning opportunities within the school library setting for their students with ASD.

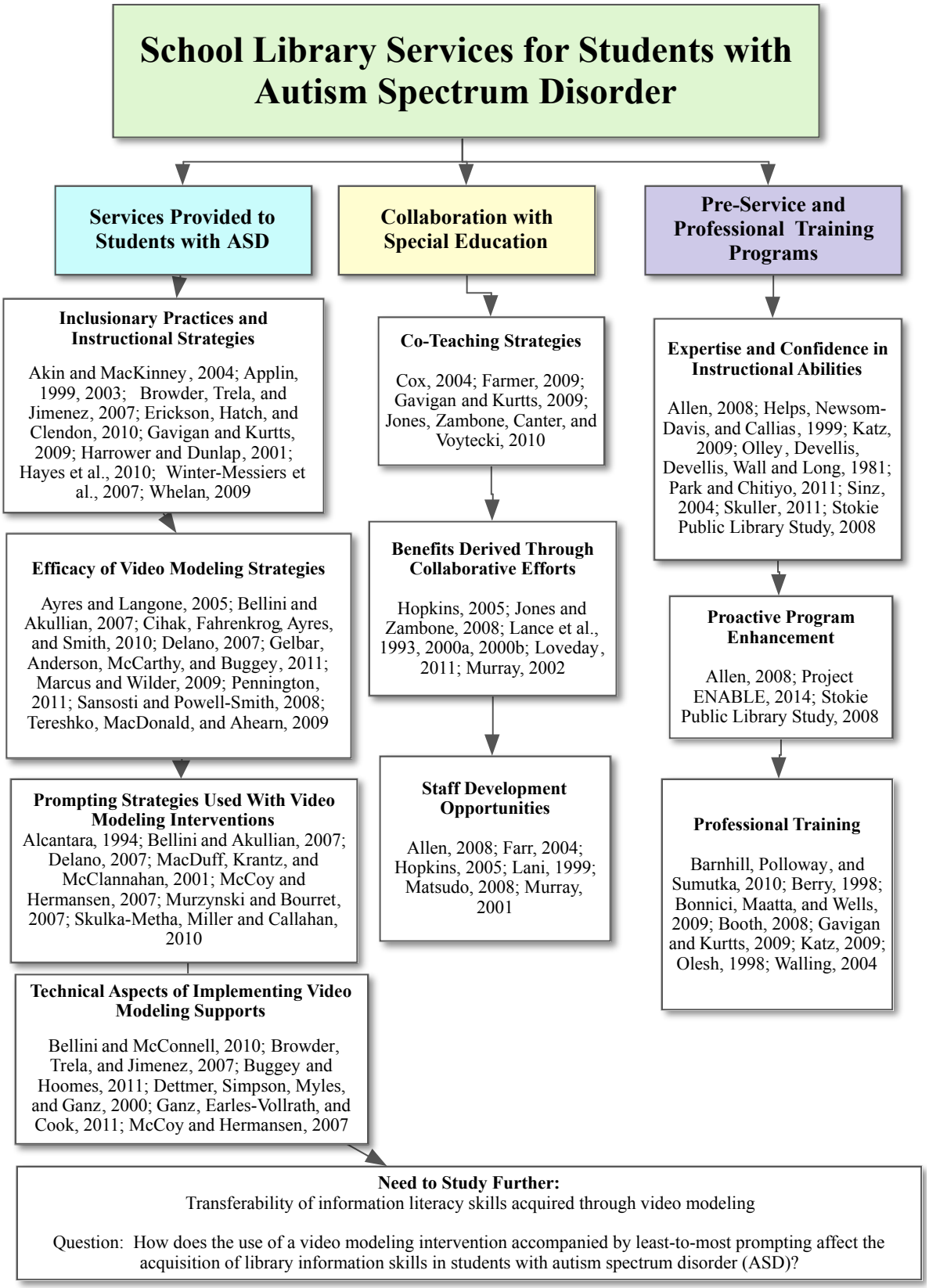

Figure 2. Literature Map.

Literature Review

In order to ascertain the effectiveness of school library programs in meeting the educational needs of students with ASD, it is necessary to examine three main areas. This literature review will study the current services that are offered to students with ASD that receive instruction in inclusionary school programs. The examination of services will focus on possible instructional strategies that can be used by school librarians, with a special emphasis on video modeling strategies. It will also focus on the role collaboration between the school librarian and the special education team plays in delivering effective literacy skills instruction. Finally, it will examine the professional training and experience of practicing school librarians to determine their ability to meet the challenges they face in creating a welcoming and inclusive environment for all of their patrons.

Both the school librarian and the special education teacher assume similar duties in providing support and resources for regular classroom teachers in the effort to instruct students with special education needs within the inclusive classroom. They are also bound by law and professional code to ensure equitable educational services for their students. These similarities in instructional roles provide an opportunity to create a synergy that will have a positive, long-lasting effect on students with ASD.

Services Provided to Students with Autism Spectrum Disorder

Although physical access needs for students with disabilities are being met in the library setting, implementation of instructional strategies and accessibility to information and resources has found to be lacking. Researchers and practicing school librarians have developed programs, often in reaction to a perceived gap in services, to address instructional strategies to remove

barriers to learning for students with special needs. These programs often improve services to all members of the school community, including staff and parents.

Research studies and reports examining the implementation of strategies found to be effective in improving inclusionary teaching skills, provide the school librarian, as well as the regular classroom teacher, with innovative methods to improve the educational success of their students with ASD.

Inclusionary Practices and Instructional Strategies

Gavigan and Kurtts (2009) explored methods to improve the delivery of services to library patrons with special needs including the use of assistive technologies and an emphasis on universal design of learning (UDL) in the creation of accessible and effective curriculum-based instruction to support the needs of all learners. Assistive or adaptive technologies are products that help people who cannot use regular versions of products or equipment and have been adapted to assist persons with disabilities. Universal Design for Learning was adapted from the universal design principle used in architecture. It refers to the idea that instruction should involve teaching styles that incorporate a variety of multi-sensory learning techniques that will meet the needs of all users/learners.

Erickson, Hatch, and Clendon (2010) also examined literacy education and instruction for students with significant intellectual disabilities and the use of assistive technologies (AT) to encourage and support emergent readers' attempts to improve their reading comprehension and writing skills. Their study focused specifically on the 10% - 20% of students diagnosed with intellectual disabilities who require extensive levels of support. Citing an intervention using AT, the authors report that within four months students with significant intellectual disabilities had successfully gained an understanding of print, alphabet knowledge, and writing skills.

Recommendations include the careful selection of instructional methods and technologies when approaching a literacy instructional program. Although the interventions reported in this article included only activities initiated by regular education, special education, and reading teachers, school librarians can use any of the AT devices and strategies mentioned in this article to strengthen their library services for students with special needs.

Applin (1999, 2003) offers a myriad of teaching strategies and techniques to proactively deliver quality library programs and resources for students with special needs. In the earlier study (1999), emphasis is placed on the academic learner and teaching styles that incorporate a variety of multi-sensory resources to reach students with disabilities and their individual learning needs. The later report (2003) asks the question: "Can libraries be proactive in providing appropriate accommodations in light of the obstacles special needs students face?" Although autism and students with ASD are not the primary focus of these papers, suggested techniques can be applied to all students with special needs, including those affected by autism spectrum disorder. Much like Whelan (2009), the author recommends librarians be proactive rather than reactive in their to service library students.

In a study done by Browder, Trela, and Jimenez (2007), teachers were trained in the use of task analysis and monitored in their application of this teaching strategy while promoting the literacy skills of their students with moderate to severe developmental disabilities. The participants included three teachers of students with significant disabilities from a large, urban school district. Each teacher recruited additional participants; two students that were non-readers, and a language arts teacher to collaborate with and as a future source of literacy lesson plans. A multiple-probe-across-participants design was implemented to determine the effects of the applied literacy lesson plan to deliver literacy instruction to the participating students and to

evaluate their increased participation in reading middle school literature. Study results showed that using age appropriate reading materials was not sufficient in itself in increasing student reading and comprehension. Teacher prompting on each step of task analysis was needed to increase student responding levels. While this study did not include librarians in their research sample, as certified teachers, school librarians can adapt these strategies to their instructional programs as suggested by the author.

Knight, Browder, Agnello, and Lee (2010), reviewed instructional strategies that have been proven effective in promoting learning for students with severe cognitive disabilities. The strategies reported include methods to deliver instruction in the areas of language arts, math and science. Literacy instruction techniques that include read-alouds, dialogic reading, and shared stories, can be used in the library instructional program to increase reader independence for students with disabilities. The authors note that there is a lack of sufficient research in teaching language arts to students with severe disabilities. However, work done by Browder et al. (2007), shows that literacy skills—including the chained steps it takes to read a book aloud, search the Internet, and write a paragraph—can be applied to language arts learning through instructional strategies based on task analysis. The authors state that current research supports the use of read-alouds and task analysis to increase literacy skills and comprehension. Additional research-based strategies such as explicit instruction, embedded instruction, and time delay to improve upon the educational, social, and functional skills of students with disabilities are recommended.

According to Harrower and Dunlap (2001), in order "for inclusive placements to be successful, educators must have knowledge of and access to empirically validated strategies to assist them" in their efforts (p. 764). The authors provide a review of documented strategies that can be individually tailored to meet the varying intellectual, developmental, and social needs of

students with autism in educational settings. Strategies reviewed include behavior analysis, interventions that include delayed contingencies, peer-mediated interventions, and self-management programs. It is also noted that future research is needed at the systems level in order to determine effective levels of support at the district, school and classroom levels. By adapting the appropriate strategies for individual students with autism, school librarians and classroom teachers can improve the inclusionary experience of students with autism and help to provide them with a quality education that all students deserve.

In a qualitative study conducted by Hayes et al. (2010), interventions were used to support children with autism and other developmental disabilities. The purpose of the study was to uncover design guidelines for the use of visual supports, defined as cognitive tools to enable learning and the production of language. The researchers investigated the interventions associated with three prototype systems: large group displays, mobile personal devices, and personal recording technologies to determine their efficacy in minimizing the challenges children with autism face in communicating and learning. Based on the results of this study, the researchers designed three interactive devices with low-cost components affordable for schools with limited educational and assistive technology budgets. Each tool was designed to address methods to improve communication skills that are often deficient in children with autism. This study extends previous studies on visual supports and other AT devices (Dettmer, Simpson, Myles, & Ganz, 2000; Erickson et al., 2010; Gavagan & Kurtts, 2009). The authors recommend further studies be conducted to explore new opportunities to design and apply these assistive technologies to both the classroom and home setting.

Characteristics of Students with ASD that Require Specialized Instruction

A study conducted by Akin and MacKinney (2004) identified practical teaching strategies for school librarians working with students with ASD. Results were gathered from interviews with autism specialists, a survey of library services, and a review of literature on literacy and autism. Successful development of library programs addressing the needs of students with ASD was discussed. Information on student characteristics in the areas of social skills, language development, intellectual development, motor and sensory processing difficulties, and frequent student preoccupation with an "area of special interest" was provided. Instructional techniques to deliver information literacy skills that address the special learning styles of children with autism included storytelling, direct scaffolding, technology, peer tutoring, and music therapy. This report included comprehensive information on how to lessen anxiety for students with autism, help them transfer literacy skills to other social situations, provide support for special education staff and parents, and increase school librarians' awareness and expertise in working with students with ASD.

Although Whelan (2009) reports on autism awareness in the public library, much of what is discussed can be applied to the school library setting. This report echoes Akin and MacKinney's research by addressing the tendency for students with autism to prefer visual learning stimuli and for the need for predictability. The author reports on a variety of proactive and inclusive programs public library staff members have created to address the needs of their patrons with ASD. Resources such as "Libraries and Autism: We're Connected", a web-based professional development project, are highlighted. This award-winning website provides information and teaching strategies for librarians. It includes free decals to be placed on library

doors to inform parents and caregivers of the special training the library staff have had in autism awareness and to assure them their children are welcome.

An exploratory study was conducted to determine the relationship between the engagement in special interest areas by students with Asperger's Syndrome (AS) and a strengthening of skills usually seen as AS deficits including communication, social, and academic skills (Winter-Messiers et al., 2007). Data was collected through interviews with 23 participants with AS between the ages of seven and 21 and written surveys from their parents. The research showed a strong positive correlation between the special interest of a student with AS and improvement in academic and social activities. Dysfunctional impairments associated with AS symptoms were shown to decease when special interest areas were used in school, home and community-based situations. Methods and strategies were provided to incorporate the strength-based model to improve student motivation, success, and self-esteem. This study provides insight into opportunities school librarians have to create a rapport with students with AS who often are frequent users of library services. A better understanding of special areas of interest and their power may enhance library resource selection and collection development.

Dettmer, Simpson, Myles, and Ganz (2000) conducted a case study of two elementary-level male students with autism to determine the effectiveness of visual supports to maintain focus, understand spoken language, and sequence and organize their school and home environments. Using single-subject reversal designs (ABAB), researchers evaluated the effectiveness of visual supports in lessening the transition time from one activity to another. By using single-subject reversal design, researchers confirmed the effects of visual supports with the withdrawal and reinstatement of the intervention. Both students displayed difficulty in transitioning between activities in home-based and educational settings. The intervention

showed significant improvement for each student in the time it took to move from one activity to another. When the visual support intervention was removed, increased transition time and undesirable behaviors such as aggressiveness and tantrums were observed. This study shows the positive effects visual supports can have on students with autism and the ease with which librarians, teachers and family caregivers can use these tools with confidence of their effectiveness.

Video Modeling Intervention Strategies

Video modeling is an intervention strategy that has been used successfully to modify and improve functional, behavioral and academic skills in students with autism spectrum disorder (ASD). It is a technique that uses videotapes rather than live (*in vivo*) instruction for children, adolescents, and adults, to observe and imitate the desired behavior or skill (McCoy & Hermansen, 2007). Research findings provide evidence that this procedure increases the learner's capacity to memorize, imitate, generalize, and maintain these observed behaviors (Hitchcock, Dowrick, & Prater, 2003). It also allows students to learn at their own pace, review cues and directions, rely less frequently on teacher prompts and increase independent learning (Kagohara, 2011).

The theoretical basis for video modeling can be attributed to the theories of social learning and self-efficacy as identified by Bandura (1969) and the theory of social development by Vygotsky (2005). The theory of social learning emphasizes the ability to learn based on observing a model or receiving instructions without experiencing the behavior beforehand. Although Bandura believed "observational learning" occurred intentionally or accidently, video modeling is a strategy, which can promote this learning modality. Self-efficacy, the belief that one is capable of performing new skills in order to produce desired effects, is central to a

person's ability to learn new skills and is considered a major component in social cognitive theory according to Bandura. This belief in one's abilities is enhanced by seeing oneself perform successfully and provides "clear information on how to best perform skills" and "strengthens beliefs in one's capacity" (Bandura, 1997).

One of the major themes in Vygotsky's social development theory is the Zone of Proximal Development (ZPD). ZPD is considered the distance between a student's ability to perform a task guided by a more knowledgeable other (MKO), an individual who has a better understanding or higher ability level than the learner, and the student's ability to solve the problem independently. According to Vygotsky, learning occurred in this zone. In video modeling interventions, both adults and peers that are more knowledgeable in performing the targeted task may provide guidance and support to the less advanced learner.

Legal mandates set forth by both the No Child Left Behind Act, 2001 (NCLB) and Individuals with Disabilities Education Act, 1997 (IDEA), require the implementation of research-based curriculum and instructional methods for all students, including those with disabilities. Since the passage of these acts, educators have struggled to find strategies that meet these requirements (Ganz, Earles-Vollrath, & Cook, 2011; Pennington, 2010; Yell, Drasgow, & Lowrey, 2005).

Bellini and Akullian (2007) believe that video modeling interventions qualify as evidence-based practices for individuals with ASD according to criteria defined by Horner et al., (2005). Video modeling has been used effectively for over forty years in a variety of settings, with a diverse group of participants, including children, adolescents, and adults with behavioral and cognitive disabilities, as well as, with students at risk of academic failure. Partly in response to positive study outcomes and ease of use, video modeling has become a popular tool as an

educational intervention with individuals with autism spectrum disorder (Delano, 2007b; Dowrick, 1999; Hitchcock et al., 2003; McCoy & Hermansen, 2007).

Although early studies focus on the use of video self-modeling (VSM), there are several other video-modeling techniques, which have been found to be effective in teaching individuals with ASD. These include adult, peer, self, point-of-view and mixed model approaches. Each modeling perspective technique has been shown to have benefits, as well as, drawbacks and has shown varying levels of effectiveness in studies done by researchers.

Adult video modeling, in which an adult, such as a teacher, parent, or an unfamiliar person, demonstrates the targeted behavior, has been shown to be successful in interventions used to improve behavioral or functional skills for students with autism spectrum disorders. Adult video modeling has also been shown to be easier to design and required less editing and training of the model, making it time- and cost-effective (Ayres & Langone, 2007; Charlop-Christy & Daneshvar, 2003; Cihak & Schrader, 2008).

Kinney, Vedora, and Stromer (2003) completed one of the first research studies utilizing adult video modeling to teach an academic skill to a student with ASD. The researchers examined the effectiveness of a video modeling intervention to teach generative spelling to a first grade student with ASD. Generative spelling involves combining beginning consonant sounds and word endings that have been taught to correctly spell words that have not been directly taught (e.g., b with –at to spell bat). The intervention was implemented in four phases: teaching written spelling, exploratory assessment of generative spelling, follow-up assessment of generative spelling, and formal analysis of generative spelling. During phase one, the researchers acted as the adult models for the video, in which one of the authors narrated the activity and another wrote out the targeted word(s). The student was then directed to complete

the same activity. Phases two and three included adult video modeling combining consonants and word endings to create new words. Phase four assessed the progress the student made and tested for generalization and maintenance. The researchers determined that the student was able to spell 26 out of 27 words correctly and on two consecutive tests was able to spell eight of ten words correctly. Additionally, the student showed improvement in other literacy skills not targeted during the intervention, such as oral reading. When asked to read the 55 words used in the spelling instruction, the student was able to read 53 of them correctly. The authors believe that the video modeling strategy capitalized on the student's visual learning strengths, a trait commonly observed in children with autism (Attwood, 2006; Attwood & Grandin, 2006; Grandin, 1996; Shore, 2003; Myles, 2006). The student made no mistakes when imitating the spelling videos introduced in phase one and resulted in the student's ability to spell to dictation and pictures without the video prompting.

Peer models are usually the same age and gender as the participant. Like adult models, peers can be either familiar to the participant (classmate or sibling) or an unknown model. Although it may be easier to use an adult to model the task or behavior to be learned and require less video editing, researchers have found using video peer modeling with a peer similar in age to the subject or video self-modeling, is often more effective in achieving positive results (Apple, Billingsly, & Schwartz, 2005; Nikopoulos & Keenan, 2003).

Apple, Billingsley, Schwartz, and Carr (2005) found video modeling to be effective in teaching social behaviors, but the results are more positive when followed by additional practice, verbal prompts, and role-playing. However, in an experiment conducted to measure the effectiveness of teaching children with high-functioning autism and Asperger Syndrome compliment-giving initiations and responses, they used a peer video modeling without additional

supports. Unlike previous peer video model studies, this study involved embedding explicit instructions for each target behavior within the videos to determine the effectiveness of the intervention and to measure generalization in other behaviors. Peers were shown giving and receiving compliments with adults providing explicit instructional rules for when and how participants should respond to each situation. For example, after a segment showing one peer showing an item of interest and saying, "Look at my ____", the second peer would give the proper compliment. An adult would then give explicit instructional rules for the compliment giving and response, such as, "When someone says 'Look at my ___' we can say, 'Cool'." (p. 3). Findings show that the participants acquired the skill of compliment-giving responses when exposed to the video model alone, with explicit rules for how and when to make the compliments embedded into the video. Although the participants were able to make compliments once the video modeling intervention was removed, to be successful in maintaining this skill it was necessary for adults to help track the frequency of their initiations and to provide reinforcement. A second experiment, including self-management techniques as part of the follow-up procedure, increased the participants' ability to maintain their compliment-giving skills.

Video self-modeling (VSM) techniques involve filming the participant performing the targeted behavior or skill. Students that are shown a video of themselves exhibiting actions with inappropriate behavior edited out. The video can be used as a positive self-review in which they observe themselves successfully performing the targeted behavior or use a feed-forward approach in which the participant is shown performing a behavior or skill that is above his or her current capacity of performance (Hitchcock et al., 2003). Video self-modeling has shown to be most effective when the targeted behavior includes behavioral skills. Although VSM can be more time consuming in filming and editing, they have proven to be as effective as peer

modeling and have shown success in generalization to other settings and situations (Buggey & Hoomes, 2011; Gelbar et al., 2012; Lang et al., 2009).

According to Bellini and McConnell (2010), many, if not most, instructional strategies are designed to address the weaknesses or deficits of the student with ASD. According to the researchers, articles and books written about autism generally begin by listing the weaknesses and deficits of individuals on the autism spectrum. Positive qualities and talents are neglected except for the occasional mention of a unique trait or skill. Video modeling, on the other hand, is a strength-based educational programming intervention that focuses on the students' strengths rather than their weaknesses. It emphasizes what an individual with ASD is capable of achieving instead of what that individual cannot do. Although there is a great deal of empirical documentation supporting the use of video modeling, few educational programs are utilizing this strategy in their classrooms.

The authors provide information about the documented benefits of video self-modeling (VSM), including the ease of implementing this intervention, and the transformation of a supported skill into an independent one. They also discuss the reasons frequently given by educators for their reluctance in using this intervention. Barriers cited include lack of access to or ability to use equipment, and lack of time to design and create the video. However, with the lowered cost of technology and access to user-friendly software and hardware, time and ability to use this instructional tool could make this process easier and less intimidating for educators to implement. Additionally, the authors offer step-by-step instruction on designing, editing, and implementing a video intervention. By following the easy to use instructions, educators can capitalize on their students "…unique strengths and talents" when using VSM and allow them to see themselves as independent and capable of performing the targeted behavior.

Point-of-View videos are shot from the perspective of the participant as if they were engaged in the targeted activity. Placing a camera at the shoulder of the model, with only the model's hands visible, as the learning objective is performed creates this type of video. Point-of-view modeling is a relatively new type and was first used by Schreibman, Whalen, and Stahmer (2000). This modeling perspective was found to be effective in teaching play skills, self-help skills, and functional skills and in priming students for transitions.

Kagohara, Sigafoos, Achmadi, O'Reilly, and Lancioni (2011) used a subjective point-of-view video modeling intervention to teach two students with ASD to check the spelling of words using the spell-check function included in word processing software programs. During the baseline phase, the students had little success performing the task analysis steps with less than 40% correct results. The students were then introduced to a video model of the task using an IPad to show the video. The modeling of the task was filmed using a point-of-view perspective, showing the participant what the activity should look like if they were actually performing the task. During the intervention phase, the two participants completed the spell-checking task correctly between 76% and 100% of the time. Follow-up data on both participants showed 100% correct performance. The authors consider the use of an IPad to deliver the video modeling intervention an effective teaching method. Other research studies using IPod and IPad devices to deliver the intervention have also been proven effective (Cihak, Fahrenkrog, Ayres, & Smith, 2010; Karohara, 2011). This study is one of the few research studies to use point-of-view modeling and to investigate its efficacy in the acquisition of academic skills.

Nikopoulos and Keenan (2004) examined the effects of video modeling intervention using a peer model and the experimenter engaged in socially interactive play. Three children with autism between the ages of seven to nine were shown the video and then their play and

social initiations were measured. Interobserver agreement data was collected in over 55 percent of the sessions and averaged 98 percent. Findings showed that social initiations and play skills measured during baseline were enhanced after the children viewed the video. Follow-up tests were completed at one and three-month intervals showing that these skills were maintained. Although this study showed positive results using a peer modeling perspective, the researchers introduced several variations in the modeling procedures that included a peer-only version of the video model if the initial peer-adult model did not elicit the desired reactions from the participants.

Ayres and Langone (2007) conducted a study to compare two video modeling perspectives to determine whether one was more effective than the other. Four elementary-aged students with autism were shown videos modeling the task of putting away groceries from both the first person and third person perspectives. First person video modeling shows the targeted skill from the perspective of the person performing the task or behavior. Third person video modeling shows the task from the perspective of an observer. Both videos used an adult female model for a number of reasons: to avoid the need for parental permission that a peer modeling video would require, to limit the need for training and coaching and to facilitate faster filming, and to demonstrate the efficacy of this intervention to educators considering the implementation of this strategy within their classrooms. The results of this study did not clearly identify either modeling perspective as superior. Additional studies report similar results, with no significant differences in modeling results and preferences among study participants (Cihak & Schrader, 2008; Geiger, LeBlanc, Dillon, & Bates, 2010; Marcus & Wilder, 2009, 2005; Sherer et al., 2001).

Several research groups have analyzed video modeling research studies focusing on specifically targeted skills acquisition and different video modeling perspectives to measure their effectiveness in improving behavioral and academic skills (Ayres & Langone, 2007; Bellini & Akullian 2007; Cihak & Schrader, 2008; Hitchcock, Dowrick, & Prater, 2003; McCoy & Hermansen, 2007; Prater, Carter, Hitchcock, & Dowrick, 2012).

In 2003, Hitchcock, Dowrick and Prater reviewed almost 200 video self-modeling applications that had been implemented over the previous three decades. They examined those videos that had been used within a school-based setting to promote academic and behavioral skills to determine positive outcomes of the studies. Only 18 studies met the authors' strict criteria for inclusion in this review. Video self-modeling interventions were used students with and without disabilities. Of the 129 participants included in these 18 studies, 58 were identified as having a disability and 71 were deemed "at risk" due to low academic achievement. Fourteen studies included only students with disabilities; these disabilities included behavioral, cognitive, language, and neurological disabilities such as spina bifida and cerebral palsy. The authors concluded that all 18 studies showed evidence of moderate to strong positive outcomes related to the VSM intervention. A variety of video modeling techniques were used in these studies, with four combining self-video and other interventions such as adult verbal praise. The authors noted that video self-modeling studies have not been widely published in educational journals and because of this, school personnel might not be aware of this intervention technique. They recommended that pre-service and in-service teacher training programs include training in video modeling in order to increase positive behavioral and academic skills.

Eight years later, Prater, Carter, Hitchcock, and Dowrick (2012) again analyzed video self-modeling research studies used within the school setting to determine their efficacy and

effectiveness in improving student performance. When selecting studies to be included in this review, the authors found nearly 650 video self-modeling interventions. Unlike their previous review, only VSM interventions that specifically targeted academic achievement were included in the analysis. The literature shows limited use of this strategy and the authors located only eight studies, which met their criteria. Of the eight studies examined, only two included participants with ASD (Delano, 2007a; Marcus & Wilder, 2009). It was also noted, that unlike the 2003 review, video self-modeling had gained prominent use as a technique to improve behavioral skills especially in students with disabilities or at risk of failure. Improvement in technological tools, lowered equipment costs and increased availability has made VSM a more popular form of intervention being used by educators.

Delano (2007b) reviewed empirical studies using different video modeling types that included 19 studies conducted between 1985 and 2005. Unlike previous reviews, which examined different video self-modeling techniques but did not focus specifically on participants with disabilities (Dowrick, 1999; Hitchcock et al., 2003; Prater et al., 2012), Delano included only those studies that focused on individuals with autism. Additional criteria for inclusion in this review were studies that had well-defined experimental designs, quantitative data measurements, and individualized videotapes created specifically for the individual participants. Studies evaluating the use of commercially made videotapes were excluded. Of the nineteen studies included, none provided a measure of treatment fidelity, and only five, measured social validity. Results showed that video modeling interventions are effective in the rapid acquisition of skills in children with ASD. However, Delano cautions that skill development is "…only meaningful if the skills are useful in normalized settings" (p. 40).

McCoy and Hermansen (2007) believe that instructional techniques such as video modeling, complements the visual strengths of students with autism. By utilizing videotapes for students to observe behavioral, functional and academic skills, emphasis is placed on the stimulus, which is delivered in a standardized manner, instead of a live scenario, which may be delivered differently each time. In a review of video modeling intervention studies involving students with autism, the researchers examined five video model types – adult, peer, self, point-of-view, and mixed methods – to determine the efficacy of utilizing these intervention strategies with students with ASD. This comprehensive review provides information concerning studies that utilized each video perspective, as well as, the positive features and drawbacks of each method. Models shown to have the most positive impact on student outcomes are peer and self-modeling. Several studies included in this meta-analysis indicate the use of video modeling techniques with other teaching strategies may have an influence on the positive outcome of the interventions. Studies using computer-assisted instruction, *in vivo* training, and visual and verbal prompting were included in this review. The authors questioned the degree to which these other interventions influenced the outcome of the studies and recommend continued investigation into combining video modeling with other instructional modalities in order to increase the educational opportunities of students with ASD.

In a meta-analysis of video modeling interventions, Bellini and Akullian (2007) evaluated 23 single-subject design studies to determine the effectiveness of video modeling and video self-modeling interventions for children and adolescents with ASD. The study was undertaken to examine whether or not video modeling interventions meet the criteria for evidence-based instruction. These standards were determined by Horner et al. (2005) as part of the Quality Indicator Task Force sponsored by the Council for Exceptional Children. Criteria for evidence-

based practices include "(a) the practice is operationally defined; (b) the context in which the practice is to be used is defined; (c) the practice is implemented with fidelity; (d) results document the practice to be functionally related to change in dependent measures; and (e) the experimenter effects are replicated across a sufficient number of studies, researchers and participants to allow confidence in the findings" (pp. 176-177). Horner et al. also recommended that the effectiveness of the strategy be documented in at least five peer-reviewed journals, be replicated by at least three different researchers, and combined studies include at least 20 total participants before it could be considered evidence-based (Bellini & Akullian, 2007, p. 265). Using these guidelines, the researchers implemented both qualitative and quantitative methods to determine the efficacy of the 23 selected studies. Findings suggest that video modeling and video self-modeling interventions are effective in promoting and improving social communication skills, behavioral skills, and functional skills in individuals with ASD. Included in this meta-analysis were several studies that used video modeling interventions with visual cueing and prompting, consequent strategies, and self-monitoring techniques. For example, adult video modeling may introduce the task, and video self-modeling may be created to provide feedback to the participant on their performance of the task. Findings from studies using this model type, showed mixed results in teaching social initiations, conversation skills and play skills (Nikopoulos & Keenan, 2004; Sansosti & Powell-Smith, 2008; Tereshko, MacDonald, & Ahearn, 2010). Bellini and Akullian note that the combination of these instructional strategies may be "…a clinical strength" (p. 282) of these interventions. However, the authors consider it a weakness of their meta-analysis, due to the lack of research into the effects of these combined strategies. Only nine studies included documentation of intervention fidelity and only five studies measured social validity. However, there were no significant differences in outcomes

between those studies and studies that did not document these features. Based on their meta-analysis, the authors concluded that video modeling interventions meet the criteria for evidence-based practices as developed by Horner et al. (2005).

The literature indicates that video modeling is an effective tool to improve skills in individuals with autism. Reasons for this may be because it reduces attention and language demands, does not require social interactions with teachers or peers, and provides information in visual format (Sherer et al., 2001). However, there is a gap in the literature concerning research studies examining the effectiveness of the use of video modeling techniques for the acquisition of academic skills within the library setting to improve the learning outcomes of students with ASD.

Prompting Strategies Used with Video Modeling Interventions

All learners, including persons with autism, need to practice skills and receive feedback in order to acquire new skills (MacDuff, Krantz, and McClannahan, 2001). However, persons with autism often do not respond to obvious cues and need additional stimuli in order to master the desired skills or behaviors. Prompts are considered "auxiliary" or "artificial" stimuli (p. 38) that have been proven effective in eliciting the correct response. Prompts are often delivered verbally, with gestures, modeled, or by physical guidance to increase the chance that the learner will make the correct response (Krantz & McClannahan, 1999).

MacDuff (1999) reviewed 268 journal articles and book chapters and found that verbal prompts were the most commonly used auxiliary cues, with modeling of the target behavior or skill the second most common type of prompt. Studies reporting the use of modeling prompts included both *in vivo* and videotaped models. Many of these studies used prompts in conjunction

with other intervention techniques; none of the studies reported the use of modeling prompts alone.

Although prompts can help facilitate the acquisition of new behaviors or skills, mastery of these skills is considered successful only if the skills are performed correctly and independently after prompts are removed. MacDuff, Krantz, and McClannahan describe the six most frequently used "prompting packages" (p. 40) that combine several prompting sequences to assist persons with autism in acquiring new skills or behaviors.

A least-to-most prompting strategy begins with minimal assistance and is increased to more support if the desired response is not received. The teacher provides help if the student does not respond after a short (5 to 10 second) delay, using the least intrusive prompt, often beginning with verbal prompts, gestures, modeling and manual or physical prompts.

Most-to-least prompting provides the learner with the amount of support needed to successfully acquire a new skill, with gradual reduction of prompting until the task can be completed independently. Most-to-least prompts include "physical guidance, partial physical guidance, modeling, gestural prompts, and verbal instructions" (p. 41).

Delayed prompting strategies encourage fading of the prompts by providing a prompt only after a brief period of time has elapsed between the stimulus that should elicit the behavior and the delivery of the prompt. This type of prompt has been shown to be effective for teaching new skills. However, Oppenheimer, Saunders, and Spradlin (1993), found that delayed prompting may cause dependence on the prompts by causing the learner to wait for the prompt instead of attempting to respond independently.

Graduated guidance consists of manual prompts that are faded by changing the intensity of the prompts or the location of their delivery. This prompting sequence might start with hand-

over-hand prompts, faded to prompts at the wrist, arm, elbow, and shoulder. The next step in the prompting strategy might include shadowing the learner's movements without physical contact. This is often used in combination with other prompting procedures.

Stimulus-fading provides an exaggerated physical dimension of a stimulus to help a person make a correct response. As an example, this prompting strategy might be used to teach a child to vacuum a rug or furniture. In the initial intervention sessions, the areas to be vacuumed would be covered with dirt. The learner would be shown how to vacuum the dirty areas. In subsequent sessions, the visible dirt would be reduced until the learner could vacuum without the stimulus of dirt to guide their task completion.

Stimulus-shaping allows for the gradual changing of the physical characteristics of stimuli in order to affect task accomplishment. MacDuff, MacDuff, McClannahan, and Krantz (1996) used this prompting method to teach three children how to state dollar amounts that included decimals. The children were originally given written amounts in whole dollars (i.e., $1 and 55, or $4 and 67) and when the children stated the amounts correctly, the words were changed to be more "decimal-like" numbers (p. 43). When given the amounts written as $1.55 and $4.67, the children in the study were able to read them correctly. This strategy has been proven to be an effective prompting and prompt-fading procedure, but is often difficult for instructors to implement because it requires detailed stimulus preparation (Lalli & Browder, 1993).

In 1994, Alcantara conducted one of the first studies to incorporate video modeling intervention accompanied by a least-to-most prompting strategy. Calling this intervention a "videotape instructional package" (p. 41), Alcantara sought to teach three students with autism how to shop for groceries. Students were shown videotapes of an adult instructor modeling the

desired 32-step task, then immediately taken to a grocery store in the community and provided on-site verbal prompts, reminders, and reinforcements to assist them in the acquisition of grocery purchasing skills. When study participants were unable to independently complete the 32 steps in the purchasing task, a least-to-most prompting system was added. The instructor would first provide a verbal prompt. If the student did not respond to this prompt, the instructor modeled the step. Finally, if the student still did not respond to the modeled prompt, the instructor provided physical guidance to help the student accomplish the step. The results of the study showed that the study participants were successful in mastering the skills being taught in this intervention "package" but the author notes that it was difficult to determine whether videotaped modeling alone could have delivered the same results (Alcantara, 1994).

Murzynski and Bourret (2007) compared a video model combined with least-to-most prompting treatment with a treatment design using least-to-most prompting alone to teach daily living skills to two boys with autism. The authors designed this study specifically because previous studies "…had not thoroughly examined the supplementary effects of combining these two procedures…" (p. 147). Their results showed that study participants were able to acquire the desired behavior with fewer sessions during the video modeling combined with least-to-most prompting treatments than in the sessions using least-to-most prompting alone.

Shulka-Metha, Miller, and Callahan (2010) conducted a meta-analysis to evaluate the effectiveness of different video instruction strategies (video modeling, video self-modeling, and point of view video modeling) for teaching skills to children with autism. In their report, the authors provide this description of video modeling which includes a system of prompts as part of the video modeling treatment procedure:

> VM is described as a process where (a) a person is asked to watch a video prior to instruction in the target skill, (b) the target skill is modeled by an adult or peer within the activity context, (c) the instructor provides prompts and reinforcers to the person for attending to relevant stimuli, and (d) the person then imitates the behavior of the model when provided with the opportunity to perform the skills displayed in the video (p. 23).

In this meta-analysis, twenty studies involved video modeling by adult, peer and/or siblings; four studies were self-modeled; and two studies utilized point-of-view modeling. In the video modeling by others group, the authors found that only four studies (D'Ateno, Mangiapanello, & Taylor, 2003; McDonald, Clark, Garrigan, & Vangala, 2005; Nikopoulos & Keenan, 2004b, 2007) used video modeling without any additional prompts, reinforcers, or other teaching strategies to teach the targeted skills. These studies were designed specifically to evaluate the effectiveness of using a video modeling treatment for the acquisition of targeted skills. Because there were no other variables to affect the outcome, the researchers were able to conclude the positive results were caused by the video modeling intervention itself. However, because only four studies used video modeling without prompts, Shulka-Metha, Miller, and Callahan believe that no conclusions can be made as to the effectiveness of this intervention method.

Although results of these studies showed positive results for students receiving both video modeling and prompting treatment interventions, the authors recommend that further studies be conducted to determine whether video modeling, prompting and/or in vivo instruction, or the combination of these strategies resulted in skill acquisition. The authors state that implementation of video modeling instruction appears to be more effective when used with a

system of prompts and reinforcers to promote skill acquisition, maintenance, and generalization of targeted skills.

This conclusion is similar to findings of other meta-analyses conducted to determine the efficacy of video modeling interventions (Bellini & Akullian, 2007; McCoy & Hermansen, 2007; Delano, 2007b). As Bellini and Akullian (2007) concluded in their literature review, video modeling may combine any of the other models listed above or other intervention strategies, such as computer assisted instruction, visual cues, prompting, and reinforcement. However, one of the main problems with a mixed model approach is the difficulty in determining which part of the intervention caused a positive result or was most effective: the video modeling segment, the other prompts or cues, or the combination of the methods.

Collaboration between the School Librarian and the Special Education Team

With the majority of students in special education receiving inclusionary education, school librarians encounter students with special needs in the library setting on a daily basis. Research has established a link between the quality of services provided to students of special education and the collaborative efforts between school librarians and special education teachers. The literature review examines the relationship between school libraries and special education and the effect teacher collaboration has on learning programs and library usage by students in special education programs.

Co-Teaching Strategies

In his book, *Helping Teachers Teach* (1985), Turner and discusses the relationship between school librarians and their efforts to help teachers teach more effectively. Turner defines the role of the school library media specialist as one who assists teachers, values this role and possesses the competencies and personality to carry it out. In a later article, the Turner

(1987) calls for further study to determine the extent to which librarians are involved in helping teachers teach and what would be needed to progress from "simply providing resources to becoming an active partner in the instructional process" (Turner, 1987, p. 230). The role of the school librarian also includes providing in-service training for teachers in order to assist them in incorporating effective methodologies and up-to-date information in their instructional practices (Turner, 1988). These early works document the evolution of the role of the school librarian from assisting teachers to becoming equal partners in the educational process.

Montiel-Overall (2005a), explains the many meanings associated with the word collaboration and the ways in which it has been applied in various social and scientific fields. The author proposes an explanatory theory to define collaboration between teachers and school library media specialists (SLMSs) in order to understand the relationship between collaboration and student achievement. As the author states, "Collaboration has become a 21st century trend" (p. 1). Based on Loertscher's (2000) classification of teacher and librarian involvement in school environments, four models of working relationships between SLMSs and teachers were developed by Montiel-Overall: Model A: Coordination; Model B: Cooperation/Partnerships; Model C: Integrated Instruction; and Model D: Integrated Curriculum. Models C and D integrate content instruction and library instruction and when put into practice "enhance student learning and the educational outcomes of students" (p. 13). In order to successfully implement collaborative programs, the SLMSs and teachers need the support of the school principal and flexible time to meet and plan for collaboration.

In a follow-up publication (2005b), Montiel-Overall provides the following definition for teacher and librarian collaboration (TLC):

> Collaboration is a trusting, working relationship between two or more equal participants involved in *shared thinking*, *shared planning*, and *shared creation of innovative integrated instruction*. Through a shared vision and shared objectives, student learning opportunities are created that integrate subject content and library curriculum by co-planning, co-implementing, and co-evaluating students' progress throughout the instructional process in order to improve student learning in all areas of instruction. (p. 32)

Both articles provide school library media specialists an excellent resource to understand and implement effective collaborative relationships to enhance educational opportunities for students and to prepare them for the challenges of the 21st Century.

In a book by Jones and Zambone (2008), emphasis is placed on the need for school librarians to work collaboratively with staff, especially special education teachers, to make students feel successful in locating library materials that are useful and to feel welcome in the library setting. They state that the librarian is an essential, though often, forgotten member of the special needs team and recommend strategies to forge a cooperative partnership with special education teachers to create quality learning experiences for their students.

School library media specialists, although responsible for serving the needs of all library users, are rarely involved in developing the instructional education plan (IEP) for students in special education programs, according to Jones, Zambone, Canter, and Voytecki (2010). This lack of involvement causes a gap in information that the librarian is privy to and therefore affects services provided to the students(s). Jones et al. (2010) recommends the school librarian become an influential partner with special educators to improve the learning environment for students with special needs. Collaboration with other members of the special education team is cited as a

positive factor in delivering satisfactory services and meeting the needs of students in special education within the school environment.

In the school setting, it has been observed that library media specialists generally do not take an active role in planning for assistive technology, usually deferring to the special educator and the instructional technology department to make decisions on the installation and use of adaptive equipment (Gavigan & Kurtts, 2009). The use of UDL to create accessible and effective instruction is recommended to address the multiple learning styles and range of student abilities. Through collaboration with special education teachers to identify the special needs of students, school librarians can develop effective teaching strategies. They can also provide information to teachers and parents on the availability of library resources to support the curriculum and enhance student learning. Although, Gavigan and Kurtts briefly address the needs of children with cognitive learning disabilities, this report does not specifically address itself to the development of instructional strategies for students affected by Autism Spectrum Disorder.

Cox (2004) studied rural Missouri school library media specialists in order to determine the level of accessibility to library resources and services for students with sensory or mobile impairments. Participants in the study included 387 school librarians who responded to a self-administered mailed survey concerning physical accommodations, library services and assistive technologies available in their school library settings. Seventy-nine percent of the study participants reported that they were encouraged to collaborate with teachers about the accessibility needs of their students and that students' educational achievement improved because of these efforts. In spite of this success, school librarians also reported a need for disability-specific training and assistance in implementing inclusive practices. Although this

study focused on students with visual, physical or hearing impairments, data gathered on collaboration between school librarians and special education personnel, points to the need to collaborate between these two education specialist groups.

Farmer (2009) examined illustrative studies on collaboration to identify factors that lead to effective working relationships between school librarians and special education teachers and to determine best practices in support of student learning. The study identified cross-study factors that facilitate collaboration between school library media specialists and special educators: shared knowledge via cross-training and regular professional interaction, effective communication skills, and effective educational team planning and co-teaching of meaningful learning activities. Farmer recommends school library media specialists and special education personnel share their knowledge and expertise about the effective use of appropriate resources and services for students with special needs. This study provides an historical perspective on collaborative efforts between school librarians and special education teachers and the legislative factors that led to efforts to work as an effective educational team. Although research studies focusing on collaboration between librarians and special education staff are limited, the author does reference additional studies representing a variety of methodologies: survey, observation, interview, action research, and participatory ethnography.

Project ENABLE (Expanding Nondiscriminatory Access by Libraries Everywhere) was created by educators at Syracuse University iSchool, Center for Digital Literacy to provide a continuing education program for school librarians to assist them in offering effective information programs and services to students with disabilities. Funded by a Laura Bush 21st Century Librarian Continuing Education Grant, Project ENABLE offered five-day workshops to teams of school librarians, special educator and regular educators, and online self-paced

interactive training that simulates the workshop content and activities. This online workshop can be taken independently or used as a staff development tool for district-wide staff development programs. By working with school-based teams, the workshops allow school librarians, special education and classroom teachers an opportunity to share information and experiences to improve co-teaching and collaborative efforts (Syracuse University iSchool, 2014).

Benefits Derived Through Collaborative Efforts

Many of the best studies on school libraries and library programs that provide service to students with special needs have been conducted internationally, most notably in Australia. The *Australian Study* conducted in 1994 and 1998, used a mixed method approach to gather information on services provided by Australian school libraries (Murray, 2001). Data was collected through two surveys and by observation and interviews conducted in case study schools. Participants in the research included school librarians, library assistants, special education teachers, special education aides and students with disabilities. The study focused on the relationship between school library and special education staff members and on the effect their collaborative relationships had on information literacy skills acquired by students in special education. Although qualitative data gathered from the surveys indicate librarians received frequent assistance from special education aides, cooperative teaching and planning with special education teachers was often cited as effective in delivery of library services to students with disabilities. Data discovered during the research project shows that although special education teachers often took their students to the public library as part of their life skills program, they did not include the school librarian in this activity, indicating a need for greater co-teaching efforts on the part of both groups. Research findings support special education literature that indicates the successful placement of students in special education within inclusion classes is facilitated by

"increased cooperation and communication between classroom teachers and special education teachers." (p. 14). The level of support the librarian received from special education teachers and aides increased the librarians' experience and confidence in working with students with disabilities. Murray concludes, just as Hopkins (2005) suggested, this confidence and collaboration between the two departments assist each area to deliver better instructional services to students and enhances the role of both groups in the school community.

During the last 20 years, Keith Curry Lance and his colleagues have conducted a series of research projects known as "school library impact studies" (Lance et al., 1993, 2000a, 2000b; Library Research Service [LRS], 2012; School Impact Studies Project, 2011). These quantitative studies are considered significant in identifying key factors in successful delivery of library instructional programs to improve student outcomes, and provide empirical evidence that effective school library programs has a positive impact on student achievement. Beginning with the first *Colorado Study* (1993), and replicated in Ontario, Canada and 21 other states including Pennsylvania (Lance, Rodney, and Hamilton-Pennell, 2000b), surveys, evaluation of test scores, and questionnaires were completed by participating school administrators, staff, and students to gather data on school library services and resources (LRS, 2012).

Findings from the "school library impact studies" have been summarized by students in the Master of Education program of the School Library & Information Technologies Graduate School under the direction of Debra Kachel, the Pennsylvania School Library Association's Legislation Co-Chairperson and professor at Mansfield University in Pennsylvania (School Libraries Impact Studies Project, 2011). Results show that collaboration between the school librarians and teachers to help students learn is one of the most important factors responsible for student achievement. Although these findings should not be extrapolated to imply results for

collaboration between school librarians and special education teachers, the research does indicate that when librarians work collaboratively with other members of the educational team, student achievement is raised.

Currently, Lance and his associates, in collaboration with the Pennsylvania School Librarians' Association and the Education Law Center of Pennsylvania, are in the process of analyzing data gathered in a second study of Pennsylvania school libraries. This research study, titled *Supporting the Infrastructure Needs of 21st Century School Library Programs*, looked at what infrastructure—staffing, budgets, collections, technology, operating hours, and professional development for librarians—contributes most to student achievement, the costs associated with them, and the gap between current Pennsylvania school library programs and what is needed to develop students with 21st Century skills (Kachel & Lance, 2013; School Impact Studies Project, 2011).

This study complements The Pennsylvania School Library Study (2011) undertaken by the Pennsylvania Department of Education (PDE) after the passage of House Resolution 987 of 2010 charging the PDE with the task of conducting a comprehensive survey to determine the state of K-12 public school libraries and the level of services provided to students. Recommendations from this study include the need for "improvement of services, facilities, library resources, and appropriate staffing and access hours, to enable students to become successful readers, learners, researchers and consumers and producers of information." The report also recommends that the PDE address the school library inequities affecting disadvantaged students and communities. Unfortunately, in spite of these recommendations, the Pennsylvania state budget signed into law on June 30, 2012 by Governor Corbett called for a reduction of over five percent for most library programs receiving state funding (PDE, 2012).

As noted by Neuman (2008), although the numerous studies by Lance et al. provides empirical evidence showing the correlation between quality library programs and increased student learning, many educators still believe that school library media programs are a luxury. This attitude can make them vulnerable to budget cuts and diminished funding similar to specialty area programs such as music and physical education, with which they are often classified.

Loveday (2011) implemented a research study to gather information on collaboration efforts between school library media specialists and special education teachers. The purpose was to add to the limited research on this topic and to examine the relationship between collaboration and its effect on the delivery of effective instructional services to students with disabilities. Online surveys, including the collection of both qualitative and quantitative data, were distributed to randomly selected Connecticut school library media specialists and special education department heads. Additional data was gathered through face-to-face interviews with school librarians and special education teachers at two secondary schools. The study found a negative correlation between levels of collaboration and the availability of special services to students. Information gathered in this study indicates multiple barriers to collaboration, which include time constraints and lack of administrative support. The author recommends further study to determine a positive correlation between collaboration and effective library services. Other studies done on the topic of collaboration, report similar findings as the ones discussed above (Allen and Hughes-Hassell, 2010; Farmer, 2009; Lani, 1999; Murray, 2002).

Murray (2002), reports on a four-year study conducted in Australia to determine the relationship between school librarians and special education teachers and the effect of these relationships on the quality of library services provided to and information literacy skills acquired by students with disabilities. Special education teachers, library staff, and students at

fifteen case study schools, both private and public, participated in the collection and analysis of empirical data on the current level of services provided, surveys, observations, and interviews of the participants. Results from this study indicate a need for service delivery by school librarians to students with disabilities that can be achieved through enhanced communication and collaboration with special education teachers. A need for additional training and support for librarians to meet these needs is also indicated. This study, while providing valuable information on collaboration and training needs, may be limited by the age of the study (1999) and information provided may be superseded by newer research studies.

Staff Development Opportunities

Farr (2004) studied the collaborative activities at two elementary schools between 16 participants including language arts, special education, speech and language, reading, and bilingual teachers, librarians, administrators, district coordinators of language arts programs, and other educational delivery staff. Data was gathered through interviews, observations of classroom activities and teacher interactions, focus groups, collaborative meeting observations, and document analysis. The purpose of the study was to identify specific characteristics of collaboration, including collaborators' roles; collaboration processes, including relationships and interactions; uses of various forms of power in the collaborative team; and decision-making processes utilized by the teachers that resulted in instructional and curricular changes. Results of this research can aid librarians, general education and special education teachers in their efforts to engage in meaningful collaborative endeavors. Suggestions for implementing a collaborative relationship between the groups are provided to facilitate shared partnership opportunities. Incorporating additional strategies to forge strong collaborative relationships with special education teachers, as recommended by Allen and Hughes-Hassell (2010), will increase the

librarian's ability to provide effective literacy and library skills lessons to their students with ASD.

According to Hopkins (2005), library media specialists should increase their efforts to support inclusion of students with special needs through collaboration with special educators. Through this collaboration, library media specialists and special educators enhance the value of both departments by building school resources and supporting the regular classroom teacher in developing specialized learning materials for their students. Furthermore, library media specialists and special educators can extend their own professional development opportunities by sharing their expertise. Through learning partnerships, librarians and special education teachers can identify workshops and conferences that provide mutually beneficial information on inclusion, learning styles, special accommodations, educational resources, and other resources that can assist them in assuring students with disabilities are accepted as members of the school community. Hopkins states the belief that these partnerships "…have the potential to enrich learning experiences for students, education professionals, and education partners" (p. 18).

In a study conducted in 1999, Lani surveyed 78 elementary school library media specialists in eight southern New Jersey counties on their training experiences and information needs regarding their instruction and support of students with special needs. The responder rate of the mailed survey was reported at 59 percent. Research gathered for this doctoral dissertation indicates a need for additional training for library staff personnel in instructional methods that address the specific needs of students with disabilities. Additionally, data analysis shows limited collaborative opportunities between school librarians and special education staff members. Most participants indicated at least minimal contact with students with learning disabilities; 45 % worked with classroom teachers of students with disabilities weekly and 10 percent on a daily

basis. However, only six percent of the school librarians reported collaborative interactions with special education teachers. Although this study points to a need to improve collaborative efforts between school librarians and special education teachers, the age of this study (1999) requires comparisons with results of later research in this area.

Matsudo (2008), a librarian at the Columbia University Teachers College, Japan Campus, presented the results of her research at the International Association of School Librarians' Conference in Berkley, CA. The study was undertaken in order to determine effective methods school librarians could use to increase participation in the instruction of students with special educational needs (SEN). Using a modified grounded theory approach; the researcher interviewed 19 school staff members concerning their perception of the role of the librarian and the services available through the library media center. Limitations of this study include the small sample size and possible positive bias due to favorable interactions with library staff. Finding that school staff members often disregard the value and support available in school library settings, the author provides suggestions and recommendations for increasing the awareness of library services. These recommendations include providing opportunities to team-teach and collaboration in the selection of appropriate library materials to support the educational endeavors of students with SEN.

Special Education Training for Pre-Service and Professional Staff Development

The American Library Association (ALA) lists 58 accredited schools of library and information science in the United States with 48 institutions offering degrees in school library media programs (ALA, 2014c). A document which outlines the basis knowledge that all certified librarians (also called school library media specialists) should possess is *The Core Competences of Librarianship* which was as approved and adopted by the ALA Council (ALA,

2009b). Competencies include the knowledge and ability to apply emerging communication, assistive and innovative technologies; pursuit of lifelong learning that includes remaining current on learning theories and instructional methods; promoting advocacy programs to assure equal rights for diverse users; and the design and implementation of appropriate services to meet the needs of all library patrons.

Standards for school library media specialist preparation programs approved by the American Library Association and the American Association of School Libraries (ALA/AASL, 2012; AASL, 2009) mandate that accredited school library programs prepare future librarians "…to model and promote collaborative planning, instruction in multiple literacies, and support the learning of those with diverse learning styles, physical and intellectual abilities and needs" (p. 1). Library preparation programs have been charged to train pre-service librarians to effectively use new and emerging technologies that engage students in authentic learning experiences, and to use evidence-based action research to collect data, which can be used to improve instructional practices in school libraries. In spite of the standards set for school library preparation programs, the literature suggests an overwhelming desire on the part of practicing librarians for formal training in special education as it related to the delivery of library services.

Expertise and Confidence in Instructional Abilities

In a mixed methods research study using electronic surveys, Allen (2008) gathered qualitative and quantitative data on school libraries in North Carolina to determine the quality of special needs programs in school library settings. Voluntary participants in the research included librarians in both elementary and secondary schools. Although school librarians indicated awareness of the need for programs that address students with disabilities, they often reported a lack of confidence in providing library services to this community. The majorities of librarians

in this study cited collaborative learning projects undertaken with their special education colleagues, and indicate a strong desire to improve best practices in inclusionary instructional programs. Survey results point to the low level of confidence in delivering special needs programs and the perceived inadequacy of pre-service library training to prepare professional school librarians for this role.

Professional librarians often report dissatisfaction with the level of training they received in Library and Information Science (LIS) programs especially in regard to serving the needs of their patrons with disabilities. Katz (2009) reports that pre-service library training often neglect instruction in best practices for special needs and at-risk populations. He recommends that LIS schools provide library students with training in identifying characteristics of students with special needs, information on inclusionary practices and services, and instruction on developing library collections to ensure equality of library services for all members of the school community. Katz believes librarians will experience a raised awareness and increased confidence in delivery of instruction with LIS programs that include special education training in their curriculum. Although this paper focuses on services provided to children with special needs and at-risk in the public library setting, the author notes the dissatisfaction felt by librarians in lacking adequate preparation for working with populations that may be deemed "special", is expressed universally by members of the library profession.

Several research studies have been done to measure educator awareness of the characteristics and behaviors of students with autism, teacher confidence in providing instruction, and the perceived need for additional training in special education topics. Study participants often included only general education teachers, however findings can be transferred to librarians and library program services.

Helps, Newsom-Davis, and Callias (1999) designed a study to investigate teachers' views of autism and their perceived needs for training in this area. The researchers used a modified version of the Stone Autism Questionnaire (1987) to evaluate the level of knowledge and understanding of faculty and support staff from eight schools in South London. Modifications to the Stone survey instrument included the addition of nine statements related to educational issues. Date gathering related to training needs and experiences with children with autism were also included. Seventy-two participants completed the questionnaire; with an additional ten mental health professionals in the field of autism participating as a control group. Although the mental health professionals showed greater awareness of autism spectrum issues, all three participating groups indicated a desire for more training on this topic. Because this study is more than ten years old, more recent research in the need for training in ASD support is indicated.

Olley, Devellis, Devellis, Wall, and Long (1981), created the Autism Attitude Scale for Teachers (AAST) in 1981 to address the then rare incidence of students with autism in inclusionary classroom settings. The scale was created to measure educator knowledge and beliefs concerning autism and to predict teacher behaviors towards students with autism based on these findings. The AAST was first used with teachers who were about to receive students with autism for the first time and to evaluate the effect of in-service training on their knowledge and beliefs. This survey was administered to 95 regular education teachers in five schools in North Carolina. Results indicate that teachers scoring high on the AAST, show positive attitudes toward students with autism, while teachers scoring low on the scale, exhibit a less positive attitude. Because of its high levels of reliability and validity, the AAST has been used in numerous situations and adapted and updated by other researchers (Park and Chitiyo, 2011; Skuller, 2011).

Using the Autism Attitude Scale for Teachers (AAST), Park and Chitiyo (2011), gathered data on teacher perceptions and attitudes concerning autism. Although Olley et al. (1981) created AAST to study teacher attitudes and the effect on teaching students with autism, more recent research has not focused on this topic prior to this study. Park and Chitiyo extended Olley's research to include an evaluation of how teacher attitudes have changed since the AAST survey instrument was created. Participants included 127 teachers from a small, mid-western town. Findings indicate participants had positive attitudes toward children with autism, especially in public school inclusionary programs. Because teachers represent a powerful influence over student acceptance of differences, it is important to focus on teacher attitudes. This information can be valuable in developing training and professional development programs for regular education teachers and librarians.

Sinz (2004) conducted a survey to determine the attitudes and viewpoints of regular and special education teachers concerning students with Asperger's Syndrome (AS) that they work with in their classrooms. The survey was also intended to ascertain additional supports and training needs of these educators, as well as their comfort levels in providing effective educational instruction to students with ASD. Participants of the study were educators in an elementary school in the suburbs of southwestern Minnesota. Surveys were sent to 62 educators at the participating school, resulting in 36 surveys completed and returned. Test piloting of the survey with a small sample of autism experts and elementary teachers was done prior to the distribution of the questionnaire instrument. Limitations to this research include the inclusion of only elementary school educators, a sample from only one school, and the limited response rate of only 59 percent. Results from data analysis suggest that a majority of educators do not feel prepared by training, support and available resources to effectively instruct their students with

ASD. Additionally, the majority of educators surveyed indicated a lack of confidence and levels of anxiety associated with assisting these students.

Skuller (2011) also conducted research to study the effect teacher efficacy, or belief in their ability to impact student learning, and teacher burnout has on educators' attitudes toward students with autism. The researcher adapted a survey instrument originally created by Olley et al. (1981) and named it the Teacher's Attitudes about Autism Scale. Using factor analysis, Cronbach's alpha and interscale correlations to test reliability and validity, Skuller invited 684 special education teachers to complete the survey; 267 (39%) responded. Findings showed that environmental factors were independent of teacher attitudes toward students with autism, but coping and stress were significant factors in teacher burnout. Additional training needs were cited as a necessity to overcome stress and the associated attitudes toward autism. Limitations of this research study include low response rate and failure to include additional educational specialists in the study.

Proactive Program Enhancement

Since 1917, school library guidelines and standards have been published to provide resources and information for practicing school librarians interested in enhancing their program services and instructional delivery (Empowering Learners, 2009, p. 55). Both *Information Power: Guidelines for School Library Media Programs* (AASL, 1988) and *Information Power: Building Partnerships for Learning* (AASL, 1998) have contributed significantly to resources available for school librarians. Much of the research done by Lance and his associates is based on the Information Power model and the six decades of research related to the impact of library programs on student achievement (Lance, 2002; Neuman, 2004; School Libraries Work, 2008).

A more recent publication, *Empowering Learners: Guidelines for School Library Programs* (2009), provides updated standards to ensure an effective school library program that builds on the constructivist approach found in *Standards for the 21st Century Learner* (AASL Standards, 2009). The *Standards for the 21st Century Learner* emphasize the need to focus on the learning process in order to prepare students for transitioning into a global workforce; *Empowering Learners* provides tools to assist school librarians in teaching the skills necessary to do this. These guidelines offer support and suggestions for enhancing school library programs to prepare all students for the challenges of the future and to provide the resources to "empower lifelong learning" (p. 6).

A report focusing on services provided by Stokie Public Library (2010), discusses library programs that were initiated after librarians discovered a gap in services to their patrons with special needs. After conducting a needs assessment, library staff applied for a grant through the Illinois State Library to fund "Come on in! The Library is a Special Place for Children with Disabilities." This program provided training for librarians and their staff in recognizing developmental disabilities, supporting children with special needs including children with ASD, and materials to prepare programs for their patrons. As a result of this staff training, library personnel report greater confidence in providing services and an increase of library usage by their patrons with special needs.

Accredited school library programs provide students with opportunities to develop skills in media and technology, which often includes using cameras, computers and specialized software to design and create videos. This knowledge of new media allows school librarians to support staff in integrating technology into their content areas. Expertise in this area also provides the opportunity for school librarians to make use of video modeling intervention

strategies when developing programs to engage their students with ASD. Ganz et al. (2011) maintain that video modeling involves three steps: identifying the targeted skill, making a short video of a skill, task or desired behavior and having students review the video until they have mastered the targeted skill. Other researchers experienced in creating video models to use in interventions for students with ASD, provide step-by-step instructions on how to design, edit and apply the strategy (Bellini & McConnell, 2010; Buggey & Hoomes, 2011; Collier-Meek, Fallon, Johnson, & Sanetti, 2012).

Summary

The factors affecting positive delivery of literacy skills instruction and other library programs for students with autism spectrum disorder found in the literature suggest three themes: the need for effective instructional strategies; collaboration; and training and support systems. Most of the research indicates that these three themes often overlap. In order to effectively implement innovative strategies, school librarians must be trained in their application within the school setting. Furthermore, in order to achieve the most effective results, consultation and collaboration with the special education team is imperative. The literature, while addressing these themes, does not provide quantitative data on the effectiveness of these programs or how these services can be of greater value to students with ASD. Further research is needed to determine which instructional strategies would provide the most effective learning experiences for students with ASD participating in inclusionary literacy skills programs. The utilization of video modeling techniques may prove to be effective evidence-based instructional strategies, which can be easily implemented by school librarians experienced in the use of media and technology.

Although there are a great number of research studies that have examined supporting the educational efforts of students with ASD, relatively few of them have focused specifically on the school librarian's role in this process. Many of the resources discussed in this literature review analyze regular and special education teacher supports and needs for additional training to become proficient in implementing effect inclusionary teaching strategies. Although these studies can, in many instances, be extrapolated to the library instructional program, this lack indicates a gap in research related to library programs and training.

Chapter 3: Research Methodology

Introduction

The purpose of this action-oriented study was to evaluate the effects of implementing a video modeling and least-to-most prompting intervention strategy within a school library setting to teach an information literacy skill to students with autism spectrum disorder (ASD). Students with ASD were observed in the library setting and in their regular classrooms to explore their usage of library resources and to understand how this instructional approach used by the librarian may affect the outcomes and experiences on the part of students with ASD.

This chapter discusses the research design and approach that were used in this study. A single subject, multiple case study design was utilized to evaluate the effectiveness of implementing a peer video modeling instructional strategy with least-to-most prompting to improve library skills in students with ASD. Student records data, observations, fieldnotes, reflective memos, and student surveys provided evidence of the issues and the environment in which librarians work collaboratively with special education teachers to provide the appropriate level of support and instruction for students with ASD in one school community.

The methods used to implement this study are described in several sections. The chapter includes a list of the research questions, a description of the research design, and the rationale for choosing it. Additional sections describe the participant population and sample size, the instruments used to gather data, the data collection and data analysis procedures, the methods used to assure reliability and validity, and the steps taken to protect the rights of participants.

Site and Population

Population Description

Five participants were selected through purposeful sampling of public school students who had been formally diagnosed with ASD and who were eligible for or receiving resource assistance from the school district's Autism Support Services Department. Students were between the ages of 11 and 14 and enrolled in 6th, 7th, or 8th grade at the time of the study. Both male and female students were included in the sample. Students selected to participate in the study were required to have an IQ in the "average" range between 85 to 129 and be able to read at a 2nd grade level.

Identification of students for case study inclusion was done with the assistance of the Special Education staff and through a review of school records. The parents of the students were contacted to obtain permission to allow their children to participate in this research. Signed permission on consent forms was obtained from the parents (see Appendix A). Students were asked to give their assent to participate in the study (see Appendix B). Their understanding and voluntary assent were verified by their Special Education teacher, who was present when students met with the researcher to discuss the study.

Site Description

The location selected to conduct the case study is a mid-sized K-12 public school district located in a suburban area in Pennsylvania. Approximately 10 percent of the student population has been diagnosed with ASD. Support for these students is provided through Autistic Support programs at all grade levels and coordinated by a fulltime Autistic Support Program Coordinator who oversees these services. District commitment to providing outstanding educational services to students with ASD involves providing a comprehensive educational program in a least

restrictive environment and offering Extended School Year (ESY) programs to qualified students.

The research site is one of the two middle schools in the district. The researcher is employed as a school librarian at the site and worked with study participants in both the students' resource classrooms and in the school library. The school library is open from 7:30 AM until 4:15 PM each school day and is used heavily by both students and staff. There are two class areas, two computer labs, and several small learning nooks within this space. The library also contains over 20,000 books and electronic materials as well as approximately 40 laptop computers for student use. Each of these computers has Internet access and an online library card catalog program.

Site Access

The use of a local school district to conduct a case study of students diagnosed with autism spectrum disorders required that special measures be taken. The researcher is currently employed at the selected site. As Glesne (2006) noted, ethical and political dilemmas in conducting "backyard" research may include what she terms "dangerous knowledge or information" (p. 32). While seeking permission to do research at this site, the researcher and school district representatives discussed methods to assure student identities would be protected. In addition to the use of identifying codes and pseudonyms for each participant, the name of the school district was redacted from all documents in order to limit student identity exposure. School district officials imposed no other restrictions on the collection or reporting of data by the researcher. Because this was an action-oriented study in which the researcher attempted to make an instructional technique "better" by improving the learning experience for students, the potential difficulties associated with "backyard" research were minimized. Using suggestions

provided by Glesne (2006), the researcher limited knowledge of the study to staff members directly involved in the research process. This helped to avoid confusion for colleagues over which role the researcher/school librarian was "playing" (p. 31). Additionally, Special Education teachers and the researcher worked collaboratively with the understanding that any knowledge gained during this research process would be used to improve the researcher's instructional practices and shared with the group and "…those most invested in carrying out the needed changes" (p. 33) in order to improve instruction for students with ASD.

Because this school district receives a great deal of both positive and negative publicity, there is a certain amount of sensitivity and caution involving issues related to student programs. Permission to study students with special needs was difficult to obtain. Limited risk to participants, protection of their privacy, and the assurance of anonymity are required by Drexel University and helped to lessen the school district's administrators' concerns. A request for permission for access to this site was submitted to the office of the Assistant Superintendent of the school district (see Appendix C). Final approval to complete the study was granted by the School Board, after the attorney for the school district had reviewed the application (see Appendix D). Stakeholders and gatekeepers such as Special Education teachers and support staff, the principal of the school where the research took place, the Supervising Coordinator for the Autistic Support program, and the Assistant Superintendent were approached to obtain preliminary support and to seek their input in this process.

Research Design and Rationale

A single-subject, multiple case study design was chosen in order to determine the efficacy of the intervention strategy being used. Each case study determined whether a peer video modeling technique accompanied by least-to-most prompting introduced in the

intervention phase of the study had an effect on the academic skills acquisition of the study participant(s).

The use of a single-subject, multiple case study approach can personalize the data collection process because data is collected on each participant and is individually analyzed. This case study design is often used when it is not possible for subjects to return to the original baseline condition (Creswell, 2008; Maxwell, 2005; Merriam, 2009; Yin, 2009). In this research study, it would have been impossible for students to unlearn the new skill being taught through the video modeling intervention. Using this research approach provided data that indicated the effectiveness of a video modeling instructional strategy in information seeking skills acquisition of students with ASD.

Although several research studies have investigated the efficacy of using different video model formats, self-modeling and peer modeling have often been shown to provide the most positive results (Ayres & Langone, 2007; Bellini & Akullian, 2007; Cihak & Schrader, 2008; McCoy & Hermansen, 2007). Self-modeling involves filming the individual performing a desired task or activity while being directed to complete the task by a teacher or other adult, often without the subject being aware of the filming. The video is then edited to remove the teacher and the verbal prompts so that only the individual appears performing the positive behaviors in the edited video footage. The edited video is then shown to the individual in order to achieve the targeted skill or behavior. This strength-based instructional strategy has been shown to be an effective intervention, which allows the individual to visualize him- or herself performing a task or skill not yet mastered (Bellini & McConnell, 2010; Buggey & Hoomes, 2011; Dowrick, 1999).

For this research study, it was determined that a peer video modeling technique would be the most appropriate. The peer video model was chosen to limit the possibility of multiple-treatment interference. By limiting the study participants' exposure to the video prior to the intervention, responses were not affected by prior learning of the task, which might have occurred if the study participants had been filmed performing the book search for use in a self-modeling video.

Research Questions

Data was collected in order to explore the following questions:

1. How does the use of video peer modeling accompanied by least-to-most prompting affect the acquisition of library information skills in middle school students with autism spectrum disorder (ASD)?
2. What are the perceptions of middle school students with ASD regarding using a video peer modeling intervention with least-to-most prompting in the library?

Research Methods

Introduction

Several data collection instruments were used to gather information in order to develop an in-depth understanding of each case being studied. By collecting multiple forms of data, the researcher had a strong foundation on which to explore this "bounded system" (Creswell, 2008, p. 476).

To gather factual data of student test scores, Individual Educational Plans (IEP), and other assessments that provide information on student abilities and characteristics, a document review was completed. A peer video model, created to demonstrate an information literacy skill,

was used in the intervention. A task analysis was used to assess the impact of the treatment of the independent variable (the video accompanied by least-to-most prompting) on the dependent variable (participants' ability to complete the task). Videotaping of the intervention sessions provided documentation of interactions that took place and allowed repeated viewings of these interactions for analysis purposes. The researcher also completed fieldnotes during the study in order to document and describe the activities and events taking place. Reflective memos were included with the fieldnotes to capture the researcher's feelings, reactions, interpretations and speculations as to what was being observed (Creswell, 2008; Merriam, 2009). A Student Questionnaire was used to collect data on students' perceptions of the peer video modeling with least-to-most prompting intervention, including their satisfaction levels in completing the activity, their self-evaluation of their skills acquisition, and their level of enjoyment in learning through this instructional mode.

Stages of Data Collection

Data was collected over a period of three months, beginning in January 2013. Prior to the collection of research data (November/December, 2012), the video model intervention instrument was designed, filmed and edited. A peer model was recruited from student library volunteers and her parents were asked to provide permission for her to act in the video. The student was asked for her assent before the video was created. Possible study participants were identified and recruited during this time. Parents of the students meeting the inclusion criteria - including official diagnosis of ASD, minimum IQ (85 to 129 range), and reading levels (2^{nd} grade) - were asked to provide permission for their children to participate in the study. Students were then asked for their voluntary assent to participate.

The researcher anticipated beginning the research study in October 2012. However, data gathering did not begin until January 2013. Obtaining official permission from the school district contributed to this delay. Although the researcher had received verbal approval from several supervisors and administrators, unanticipated administrative personnel changes and reassignments required permission from all newly assigned administrators involved. After obtaining permission from the new school principal, supervisor, coordinator of Special Services, and the Assistant Superintendent, the researcher again submitted a request to conduct this research with the school district. The researcher met several times with the Superintendent and attorneys for the school district to explain how the study had been designed to limit the risk to participants, protect of their privacy, and assure their anonymity. Satisfied with this information, the school district granted permission in November 2012 (see Appendix D).

After receiving permission from the school district, the researcher submitted all necessary documents to Drexel University's Internal Review Board and received IRB approval in January 2013 (see Appendix E). Following IRB approval, parents of eligible students were contacted and consent to work with their children was obtained. As requested by the school district, the researcher contacted each family and offered to meet with them in person to explain the research process and the voluntary nature of the study. Two of the participants' parents did meet face-to-face with the researcher and were able to share some insight into their children's preferences, background knowledge, and learning styles. The other parents were in contact through emails, regular mail - U. S. Postal Service, or by telephone. Finally, the researcher met with each student and received his or her assent to participate in the study. This assent was obtained during a meeting with the student(s) and their special education teacher to assure the students' understanding of the process.

The timeline for the research process can be seen in Table 1.

Table 1

Stages of Implementation

Phase I – Research Study Preparation			
Date	Activity	Description	Duration
July, 2012	Site Access Permission Request	Submit application requesting permission to conduct research study to school district administrators	1 week
November, 2012	Site Access Approval	Permission to conduct research at site granted by school district	16 weeks
November, 2012	Task Analysis	Develop step by step instructions for using the online library card catalog software program to locate books in school library collection	1 week
November, 2012	Design and Create Peer Video	Have student peer model library skills task as defined in Task Analysis	1 week
November/December, 2012	Document Review	Review student records to determine participant characteristics that meet study criteria	4 weeks
December, 2012	Participant Recruitment	Recruit participants that meet case study criteria	4 weeks
Phase II – Research Activities			
Date	Activity	Description	Duration
January - March, 2013	Video Modeling Intervention	Work with middle school students with ASD; ½ hour sessions, 2 times a week Baseline phase (A) Intervention phase (B) Withdrawal phase (A)	6 weeks 1 week 4 weeks 1 week
March, 2013	Student Questionnaire	Survey participants on their opinion of video modeling with least-to-most prompting intervention	2 weeks

Description of Each Method Used

Document Review. Permission was obtained from the school district to conduct the study involving students and to access their educational files in order to ascertain their cognitive, emotional, communication and behavioral characteristics, as well as their age of diagnosis of ASD. Student Individual Education Plans (IEPs) were reviewed for any specialized instructional modifications that may have impacted this study. Scores were gathered from the Wechsler Intelligence Scale for Children-IV (WISC-IV), Test of Non-Verbal Intelligence (TONI), Gilliam Autism Rating Scale (GARS), and other formal assessment programs such as the Group Reading Assessment and Diagnostic Evaluation (GRADE) and the Degrees of Reading Power (DRP) collected by the school district.

Task Analysis. After identifying the targeted skill, the researcher created a task analysis to determine each step in the process of locating a library book using the electronic card catalog. The task was broken down into 12 steps as shown in Table 2.

Table 2

Task analysis for using the online library card catalog.

Step	Description
1.	Log onto school computer by entering your Student number and password
2.	Open Internet using "Firefox" Internet connection
3.	Click on link for your school
4.	On school district homepage click on "Library Pages" link
5.	Log onto Library Pages by entering your Student number and password
6.	Click on Destiny Library card catalog link
7.	Type name of book in search box
8.	Click on box with T (search titles)
9.	Find book you want on the search results screen
10.	Click on book title for more information about book
11.	Make sure a copy is available – check info on right side of box – "1 of 1 available"
12.	Write down the call number of the book or print out book record

Note. Steps 7 and 8 may be repeated until book is selected.

The task analysis was used to create a script for filming the video. A peer of the students participating in the case study was used to model the steps involved in this task. The peer model was recruited from student library aides who assist the librarian in helping other students during their free periods and was not a student diagnosed with ASD.

Video-Modeling Tool. After the task analysis had been developed, a video was designed showing a student peer modeling the step-by-step procedures involved in this task. Permission to use the student was obtained from her parents, and assent was obtained from the student before videotaping began (Appendix F). The student model was taught the search process and practiced it before filming began. The researcher then filmed the model describing each step as she performed the task (Ganz et al., 2011). The peer model demonstrated how to search for a book using book titles, authors, and subjects or keywords. The researcher, a school library media specialist, has experience using video camera equipment and has been trained in the use of video editing software. The researcher also studied instructions provided in journal articles written by Bellini and McConnell (2010) and Buggey and Hoomes (2011) to gain detailed instructions on how to film and edit videos to be used in video modeling interventions. Filming was done in the school library, when the area was not being used by students, and required a laptop computer; Follett's Destiny® library cataloging software program; and a Flip camera attached to a small tripod in order to minimize distractions, excessive noise, and jittery camera movements. The raw video footage was uploaded to a MacBook computer and was edited using IMovie software. The video was edited to a five-minute length as recommended by several researchers (Bellini & Akullian, 2007; Buggey, 2005). After editing, the movie was converted to a QuickTime video and saved on a laptop computer.

Task Analysis Observation Forms. During each treatment session, the researcher used the Task Analysis Observation form (Appendix G), to collect data on the number of steps each participant accurately completed without direct instruction or prompting. This form was used to show the number of steps in the process each case study participant was able to achieve independently. When a student was unable to complete a step in the task, the researcher provided a prompt after a five-second delay in order to assist the student in learning the skill. The use of prompts was noted on the task analysis form along with the type of prompt needed. The prompts moved from least-to-most, using verbal (e.g.; "Click on the Library Pages link"), gestural (point to what needs to be done), or physical prompts (touch the student to get the motion started). As each student progressed in his or her ability to complete the task, prompting was faded to avoid a dependence on the prompting (Heflin & Alaimo, 2007).

Fieldnotes and Reflective Memos. In addition to completing task analysis observation forms documenting the video modeling intervention session activities, the researcher completed extensive fieldnotes describing the observed activities, impressions of the situations, and participant behaviors and reactions. Field contact summary sheets (Appendix H) were completed after each interaction with study participants and staff members involved in each case study to assist the researcher in documenting events and identifying new themes that presented themselves during the research process. The researcher also wrote reflective memos to capture thoughts on the research process and to interpret what was being observed as it happened (Merriam, 2009). These data gathering forms were used to determine opportunities to collaborate with the Special Education team and to further understand the collaborative process. Videotaped sessions supplemented fieldnotes and reflective memo documents and assisted in filling gaps that may have been missed by the researcher during the intervention activity.

Videotaping the Intervention Activity. In order to monitor the intervention process actively and accurately, the researcher videotaped each intervention session throughout the study. Prior to the beginning of each session, a digital video camera mounted on a tripod was strategically placed in the library area to capture the study participants' activities, reactions, facial expressions, gestures, and verbal comments during the treatment sessions. Each study participant was videotaped as he or she viewed the video model on the computer and attempted to complete the targeted skill. The videotapes were uploaded to the researcher's computer and analyzed using Transana©, a computer-assisted qualitative data analysis software (CAQDAS) program. Transana was specifically designed for audio and video data analysis and is maintained by researchers at the Wisconsin Center for Educational Research, University of Wisconsin-Madison (Transana, 2014). This software was used to transcribe data, organize it into meaningful categories, and identify and access significant sections of the video data. After uploading the videotaped sessions into the Transana program, the researcher watched the videos and created verbatim transcripts of the spoken words caught on each video. The Transana main interface page is divided into four distinct sections: audio visualization, video media, transcription, and data file management areas (see Figure 3). This segmentation of the interface screen allowed the researcher to play the video several times, while transcribing the activities occurring on the video and syncing the videotaped segments with the sounds recorded. Additional details such as speech emphasis, intonation, and pace; behaviors, gestures, and movements; and other interactions taking place on the video were included in the transcription area. Repeated viewing of the videotape provided additional details that may have been missed during the treatment sessions. Documentation of least-to-most prompting was also seen and

noted on these tapes and allowed for triangulation of data with task observation forms, fieldnotes, and reflective memos.

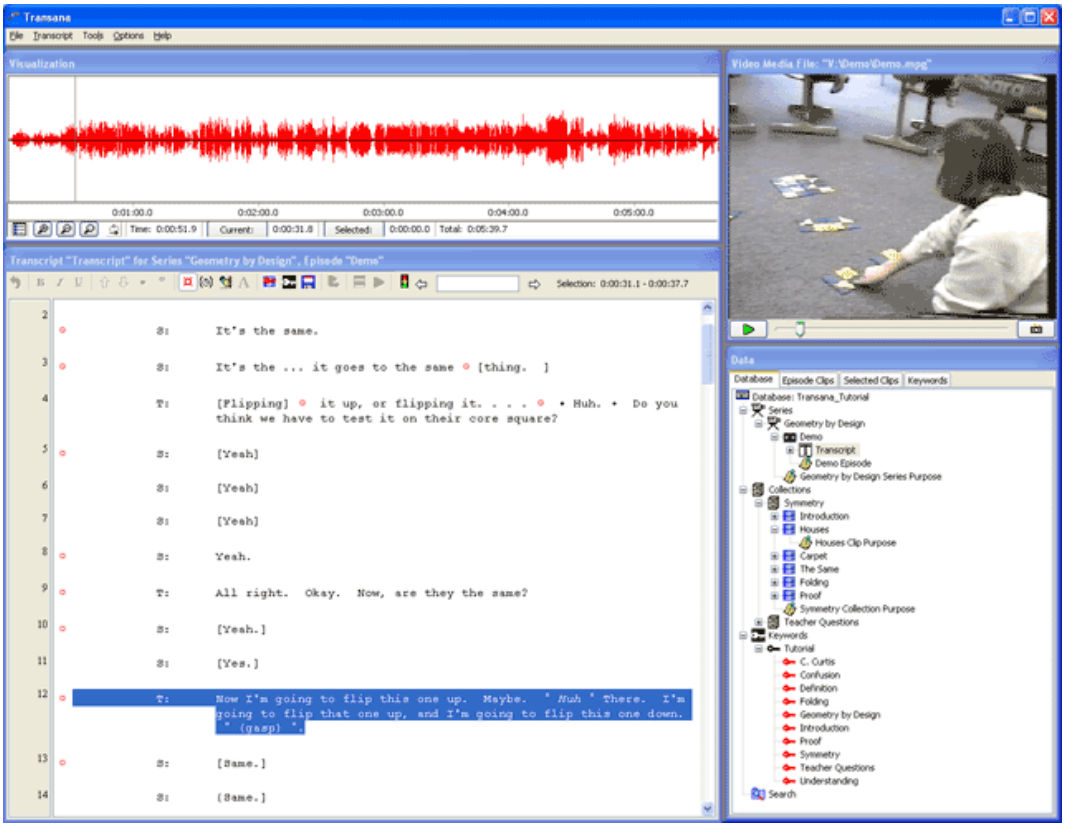

Figure 3. Screenshot of Transana main interface screen depicting four distinct sections: audio visualization, video media, transcription input, and data file management areas. Adapted from Transana©. Reprinted with permission.

Transana software was used to provide accurate and valid data, minimize observer bias, control for missing data, provide a record of whether the intervention was implemented as planned, and allow multiple viewings of the intervention process. Videotaping each session allowed the researcher the opportunity to complete observation forms and document the level of task completion after the session was finished. It provided an accurate depiction of the events

that could have been missed during the intervention session. The low cost of video camera equipment and Transana software made this a cost effective and efficient method to gather and analyze case study data.

Student Questionnaire. Student participants were invited to complete a questionnaire at the conclusion of the video modeling intervention. The survey included six Likert items and one open-ended item. Students were asked to rate their experience in learning the new information literacy skill. Issues explored in this survey included their enjoyment of the experience, their self-perception on skill acquisition, anticipated use of the skill for future library searches, and the value of this skill in their educational pursuits. If a student had difficulty reading the questionnaire, assistance was given to aid the student in completing the form (Appendix I).

Description of Intervention Activities

Technology Observation. All students in this public middle school are given a student ID and password at the beginning of the school year. At each grade level, students attend technology classes in which they are instructed on how to log onto school laptop computers and access the Internet. Study participants attended these technology classes and were exposed to this computer training. However, before the implementation of the video modeling intervention, their ability to perform these activities was confirmed by their technology and special education teachers and through direct observation by the researcher.

In a session prior to the start of the intervention, the students met with the researcher to assess their skill in using a computer. If it was determined that, if the student was unfamiliar with using a computer, he or she was instructed on how to turn the device on, how to navigate through the screen icons, and how to choose an icon to “play” a video or to use another software application.

Intervention Procedures. Each of the students participated in the study separately, two days a week for approximately one-half hour, during homeroom or a language arts class period, for a total of one hour each week. Whenever possible, treatment for each student was scheduled during non-instructional times in order to minimize any possible disruption to the students' daily schedules and to avoid disrupting the classroom teacher's instructional processes. Treatment sessions for all participants were videotaped to capture video and audio data that was later analyzed using the qualitative analysis software program Transana©.

Each participant's ability to perform the library book search (the dependent variable) was measured using an A-B-A Withdrawal design: participants were observed in the library during the baseline phase (A) before the students had been shown the peer video model (the independent variable); during the video modeling with least-to-most prompting intervention phase (B), when they viewed the video and then attempted to complete the task independently; and during the withdrawal phase (A), when they were assessed on their ability to perform the task without viewing the video model before attempting the book search.

During the baseline phase (A), students were instructed to log onto a computer using their ID and password and asked to attempt to locate a library book using the computer card catalog located on the computer. Baseline data collection was limited to one session (one week) for each student, to determine the ability to perform this task independently.

During the first intervention phase (B) session, each student was instructed by the researcher to locate the video thumbnail icon on the laptop computer, watch the video that had been downloaded to the laptop, then log onto another computer in the library area and attempt a search for a book; in subsequent intervention sessions, the participant was expected to follow the directions given by the peer model in the video. (A list of popular book titles had been generated

using the "Top Titles Statistics" report program in the Destiny database; see Appendix J). Each student was asked to look for one book on the list, using the book title, then an author, and finally, a subject or keyword. Data was collected on the duration of attention to the model during the intervention and on the percentage of target skills completed accurately when the student was asked to imitate the peer model. Data was collected using the same forms as in the baseline phase (A). If a student was unable to complete the next step in the task, the researcher provided a verbal (e.g.; "Click on the Library Pages link"), gestural (point to what needs to be done), or physical (touch the student to get the motion started) prompt after a five-second delay. The use and type of prompts were noted on the task analysis form and in the transcripts of the video taped treatment sessions. The intervention phase (B) continued for study participants for eight sessions (4 weeks) or when the student(s) was able to complete all the steps without prompts.

Following the intervention phase (B), study participants were asked to complete the task without the visual and prompting support during a withdrawal phase (A) to determine maintenance of the targeted skill. The withdrawal phase continued for two sessions, or one week.

Data Analysis

Case studies require a particular approach to analyze data collected during the research. Explaining each case in a holistic descriptive method is essential to providing an understanding of the data and its analysis. Data collection and analysis are both done concurrently in an interactive process that guides each additional phase in the research (Merriam, 2009). As recommended by Yin (2009), the researcher gathered all data collected through multiple sources including document review, observations, and surveys in a "case study database" that allowed

easy retrieval of information during the analysis phase. The researcher also created an inventory of the case study database that was organized and labeled so that specific data for each participant could be located during each phase of the analysis (Creswell, 2008; Merriam, 2009). The database inventory document included each session's number, date, time of day session was held, videotape identification number, number of minutes for the session, notations on transcription of session data, total number of task steps achieved, number of steps achieved independently, number of prompts needed, and researcher comments (see Appendix K).

By triangulating data from document review, observations, fieldnotes and reflective memos, videotapes of the intervention sessions, and student surveys, the researcher hoped to develop a richly descriptive report of the findings to promote validity and reliability. Triangulation allowed a greater confidence that the results would provide an accurate representation of each case study, which allows for the transferability of the findings to other students with ASD, for replicating the research, and for designing future video modeling interventions (Yin, 2009).

Description of Data Analysis Methods

Document Review. This information helped establish an understanding of the abilities and characteristics of the participants and aided the researcher in providing a rich, descriptive portrait of each participant. Participants' anonymity was protected by the use of pseudonyms, which also personalized the participants in the reporting of the findings. A matrix was created that placed the formal assessment results for each case study participant in categories, providing an easy-to-read display and yielding a greater understanding of the participant's demographic data and abilities. Demographic data included gender, age, ethnicity, grade level, reading level,

IQ, and date of diagnosis of Autism. The data was organized using Microsoft Excel and was included in the final research report in both tabular and descriptive forms (see Table 4).

Task Analysis Observation Forms. Data was collected using the task analysis observation form checklist to record the score or level of completion for each case study participant during baseline phase (A), intervention phase (B), and withdrawal phase (A). The completed form indicated the number of steps the students were able to complete independently and noted when prompts were needed. Data collected during the treatment was entered into an Excel spreadsheet and displayed in single subject design graphs. These graphs provided a visual assessment of each study participant's progress in acquiring the skill during each phase of the video modeling intervention. Tables were also created to document the number of steps in the task that were achieved independently and the number of verbal, gestural, and physical prompts that were required.

Fieldnotes and Reflective Memos. Handwritten fieldnotes and reflective memos were transcribed into a Word document and then coded to ascertain reoccurring themes, contradictory information, and impressions of the events as they occurred during the multiple case studies. After transcription, preliminary or "open coding" was completed to break the information into discrete concepts in order to identify categories and emerging themes. After completion of the open coding, the researcher collapsed the codes into a few broad themes or categories. The researcher created a codebook that provided a code, description, and examples of significant issues or points identified. Notations were made explaining what each code meant and why it was important or significant to the researcher (see Appendix L).

This coding helped the researcher understand the importance of the emerging themes and allowed analysis of issues that contradicted or showed a relationship to other issues discussed.

Whenever feasible, direct quotes were used to capture the participants' feelings or attitudes about the topic being discussed and to provide additional detail. The fieldnotes provided a description of the activity being observed; the reflective memos provided the researcher's impressions, hunches, or insights on what was occurring during the observation (Creswell, 2008).

Analysis of the Intervention Activity. Using Transana, a CAQDAS program, the researcher uploaded videotapes of each intervention session into a computer in order to analyze data gathered during the study. Using a facilitated manual process, the researcher transcribed the audio and video captured during each treatment session, organized each video clip into meaningful categories, added searchable keywords to the clips, and applied thematic coding to the segments. This coding was cross-referenced with the coding generated by the researcher in her fieldnotes and reflective journals. Transana fully integrates text and video into a searchable database, which allowed for easy access to important video frames and corresponding text. Each videotaped session was saved as a separate document in Word containing session information, the video clip, and a transcript of the session. This qualitative data analysis software provided verification of observed activities, displayed coding patterns in graphic form, and allowed for manipulation of video clips to show thematic patterns within each case and across cases. The videotapes were viewed several times and helped to collaborate observation data collected through fieldnotes and insights noted in the reflective memos.

By viewing and transcribing the videotapes of the intervention sessions as soon as possible after each session, the researcher measured the fidelity of the intervention process, detected problems with intervention quality or deviations from intervention protocol, and made corrections when necessary. The researcher noted whether the established protocol was

delivered in the same way for each participant as well any variations from the established protocol along with an explanation for the variation and corrections made.

Student Questionnaire. The student survey was used to determine the students' perceptions of the video modeling with prompts teaching strategy, to assess its relevance to their social needs, and to determine whether having the targeted skill would help them function in society. The survey included six Likert-scale items and one open-ended item. The Likert-scale responses included four options, ranging from a scale of 1 (strongly disagree) to 4 (strongly agree). This data was entered in an Excel spreadsheet for analysis. This data was depicted visually in a table that displayed the number and percentage of responses to each question (see Table 10).

Ethical Considerations

In order to assure all participants were treated with respect and in an ethical manner, the researcher followed rules and procedures established to protect the rights of participants in research projects (Creswell, 2008). The researcher completed the CITI training offered by Drexel University in order to receive certification from the Institutional Review Board (CITI, 2011) and filed the necessary documents with the IRB in order to obtain permission to complete this study. All participants received an informed consent form that provided information on the nature and purpose of the study, the risks and anticipated benefits, an opportunity to ask questions about the study, and an option to withdraw from the study at any time with no negative consequences as outlined in the Belmont Report (1979). Because study participants included students identified with autism spectrum disorder (ASD) between the ages of 11 and 14, their parents were asked to sign a Permission to Participate Informed Consent form adapted from the Informed Consent form provided on the Drexel IRB website. Prior to obtaining the Permission

to Participate Informed Consent form, the researcher met face-to-face with the parents or guardians of the potential student participants to discuss the study and to answer any questions or concerns they had including the risks and benefits to their child if he or she participated in this study. At the conclusion of the meeting, the parents were provided with the IRB approved Permission to Participate consent form and encouraged to share the information about the study that was outlined in the document with family members or their attorney before returning it to the researcher and agreeing to allow their child to participate.

Additionally, student participants were asked to provide their assent in order to assure their voluntary agreement to participate in this project. The student assent procedure included an explanation of the research study written at their comprehension level, which outlined the procedures and purpose of the study, the possible risks, the voluntary nature of the study, and the option to decline participation at any time without any negative consequences. While obtaining the assent of each student participant, the researcher and a Special Education teacher were present to verify that the student understood what he or she was being invited to do and that the student had given voluntary assent to participate.

During the initial phase of the research, a document review was completed to gather factual data including student test scores, Individual Educational Plans (IEP), and other assessments that provided information on student abilities. This data collection phase required IRB approval because it involved human subjects, in this case, subjects within a vulnerable population.

Although students were the main focus of the study, the research posed a minimal risk to participants. Drexel University's Internal Review Board was consulted to make a final determination on the status of a possible exemption under Common Rule: Department of Health

and Human Services (DHHS) Regulations, Subpart D (Common Rule Regulations, 2011). According to Subpart D, the following activities that are likely to take place in a public school setting may qualify for an exemption:

> Research conducted in established or commonly accepted educational settings, involving normal educational practices, such as (i) research on regular and special education instructional strategies, or (ii) research on the effectiveness of or the comparison among instructional techniques, curricula, or classroom management methods.

Although it was expected that participation by students with ASD would involve minimal risk, the researcher followed all rules and guidelines as outlined in the CITI training program and through the IRB website. The researcher complied with all recommendations and requirements set forth by the IRB to assure the ethical treatment of study participants. This included the secure retention of all data including video, audio, and print documents. All physical data was locked in a filing cabinet located in a private office used only by the researcher. All information retained in digital format was stored on a password-protected computer used only by the researcher. Following the completion of the study, all research materials will be retained for the IRB-recommended length of time and then destroyed in the appropriate manner.

Chapter 4: Findings and Results

The purpose of this qualitative research study was to determine the effectiveness of a video peer-modeling intervention targeting literacy information instructional delivery to students with autism spectrum disorder (ASD) in the school library setting. Using a single-subject, multiple case study approach, this research explored the effectiveness of using a peer video model accompanied by a least-to-most prompt system to instruct students with ASD in an important library and information seeking skill in order to explore how this instructional approach affected the outcomes and the experience on the part of students with ASD.

Description of Participants

Five participants (n = 5) were selected through purposeful sampling of public school students who had been formally diagnosed with ASD and who were eligible for or receiving resource assistance from the school district's Autism Support Services Department. Students selected to participate in the study were required to have an IQ in the "average" range of 85 to 129 and to be able to read at a second grade level or above. At the time of the study, there were 18 students enrolled in the Autism Support classes at this middle school. After careful review of school records, it was determined that only seven students met the criteria to participate in this study (see Table 3).

Using a document review and consulting with staff members, the researcher determined that five students in the Autism Support program did not meet the study criteria due to lower IQ and reading scores. These students were not invited to participate in the study. An additional six students were excluded from the study because their IQ levels were above the "average" criteria set for this study. Each of these students had been dually identified as both gifted, with an IQ

measured at or above 132, and on the autism spectrum. These students received support and services from both the Gifted and Autism Support programs.

Table 3

Participant Selection

	Did Not Meet Criteria		Met Criteria	
Gender	Higher IQ and/or Reading Levels	Lower IQ and/or Reading Levels	IQ level between 85 and 129 and 2nd grade reading level	Total:
Male	5	5	5	15
Female	1	0	2	3
Total:	6	5	7	18

Participants

Parents of two students invited to participate declined, and parents of five students gave their consent. All students in the latter group gave their assent to participate (see Table 4).

Table 4

Demographic Profile of Participants

Participant	Gender	Age	Ethnicity	Grade	IQ	Reading Level	Diagnosis	Date of Diagnosis
Tommy	M	12	Caucasian	6	97	2.4	ASD	12/2003
Nick	M	13	Caucasian	7	100	4.7	ASD	5/2005
Amanda	F	12	Caucasian	6	107	5	ASD and LI	7/2003
Henry	M	11	Caucasian	6	95	2.4	ASD	4/2005
Zoey	F	14	Asian	8	93	4.2	PDD	12/2000

Note. Participant names are pseudonyms. Autism Spectrum Disorder = ASD; Language Impairment = LI; Pervasive Developmental Disorder = PDD. This table displays diagnosis information based on DSM-IV-TR criteria and guidelines, which was the standard used to diagnose participants who took part in this research study. However, under DSM-5 guidelines, all participants would be categorized under Autism Spectrum Disorder diagnosis (APA, 2013).

Participant 1 – Tommy. At the time of the study, Tommy was a 12-year-old male student in the 6th grade. Tommy had initially been diagnosed with Pervasive Developmental Disorder – Not Otherwise Specified (PDD-NOS) in January 2003 at the age of three, but a follow-up evaluation later that year resulted in a diagnosis of ASD. During his interactions with the researcher, he was found to be a pleasant young man who was compliant, seemed eager to please, and appeared to enjoy the intervention sessions.

In the school environment, it has been noted that Tommy engages in behaviors that impede learning, including but not limited to touching others (e.g., grab/squeeze hand/arm, pinch hand); self-stimulatory behaviors (e.g., rapid self-talk, hand-flapping); verbal aggression (e.g., crying, yelling); physical aggression (e.g., hit, pinch, pound table); off-task behaviors (e.g., staring off somewhere, noise making, off-topic singing); and elopement (e.g., darting within classroom and/or outside of the supervision of the adult). Tommy received support from an Instructional Assistant (IA) throughout the school day; this IA accompanied Tommy to the intervention sessions, sitting in an adjacent area of the library to afford privacy for Tommy and to be readily available to address any behavioral issues or problems.

During the treatment sessions, Tommy was observed exhibiting some of these problematic behaviors but not others. Working collaboratively with Tommy's Special Education teacher, the researcher agreed that, when Tommy attempted to touch her (e.g., hugs, playing with bracelets, touching arm/wrist/neck area), he would be reminded of "safe hands." When he moved around and bounced up and down in his chair, he would be reminded of "quiet body." Hand-flapping, self-talk, and singing were observed but were not addressed when they appeared to be related to his success and enjoyment in doing the task. Several times during the treatment sessions, Tommy was observed staring off into space and was redirected to the task by the

researcher. During periods when Tommy appeared disengaged, he was given the option to take a break or stop the activity. However, Tommy agreed to continue the task until completed and did not choose to stop early.

Participant 2 – Nick. Nick was a 13-year-old male student in the 7th grade when he participated in this research study. Nick had been diagnosed with autism spectrum disorder in 2005, when he was five years old. His Individualized Education Program (IEP) describes Nick as a pleasant young man who is respectful of his peers and adults. It is noted in the IEP that Nick will sometimes have a communication breakdown, "shutting down" when he is unable to verbalize his thoughts. He also has some difficulty in interpreting situations that he perceives as confrontational (e.g., being bumped in the hallway or being interrupted while speaking). Nick has been working with school staff to reduce his anxiety in difficult social situations and to use strategies to repair any communication breakdowns. He attends small-group instruction for social skills and language arts reading skills. Nick is reported to have strong computer skills, using word-processing, PowerPoint and other software programs. He also enjoys video games. Nick's IEP recommends that his teachers use verbal prompts to redirect his attention and to allow frequent breaks while working. However, these strategies were not needed during the study.

Participant 3 – Amanda. When the study began, Amanda was a 12-year-old female student in the 6th grade. Amanda indicated an eagerness to participate in the research project. She was extremely cooperative and willing to attempt all suggested tasks. However, before giving her assent to participate in the study, Amanda sought assurances that she would not be required to attend intervention sessions that would cause her to miss out on any of her favorite

classes or activities. The researcher agreed that all sessions would be planned around her schedule and that her teacher would be consulted to make sure session times worked for her.

Amanda has a primary diagnosis of autism and a secondary diagnosis of speech and language impairment. She receives special education supports at her middle school, including a school-based social group and speech/language and occupational therapies. A review of Amanda's IEP provided the researcher with information on Amanda's strengths and needs. It is noted in her IEP that, while working on academic endeavors, Amanda benefits from a visual/verbal prompt to stay focused on the task. Amanda has few verbal outbursts but can be verbose when giving explanations. When this occurs, a simple reminder will get her back on task. She flaps her arms or shakes her hands rapidly when excited about and/or is very engaged in an activity. She is self-regulating and re-focuses if asked or reminded.

It has been noted that Amanda has difficulty with planning and organizing her approach to problem-solving tasks. Specifically, concerns are noted with Amanda's ability to inhibit impulsive responses, adjust to changes in routine or task demands, modulate emotions, initiate problem solving or activity, sustain working memory, plan and organize problem-solving approaches, organize her environment and materials, and monitor her own behavior. Amanda's request to work around her class schedule was seen as a positive result of classroom interventions which encouraged her to advocate for herself, monitor her own behavior, and take an active part in planning and organizing her schedule.

Amanda's IEP also indicates a deficiency in fine-motor skills, including typing with only her index fingers and using her thumb for the spacebar. Amanda receives occupational therapy, which has focused on keyboarding skills. She has shown an improvement in her typing abilities and can and type with both hands and can do so with verbal prompts. Prior to the first

intervention session, the researcher observed Amanda in her Technology class and saw no obstacles to Amanda's participation in this research activity.

It was agreed beforehand that, if Amanda wanted to stop the activity because of frustration or a need to regulate her emotions, she would be allowed time to take a break to use a calming strategy before continuing the session. Amanda was also given the option to stop the session whenever she felt overwhelmed or stressed. Amanda did not make use of any of these coping strategies during the research study.

Participant 4 – Henry. At the time of the study, Henry was an 11-year-old male student in the 6th grade. Henry resides in a home where French is the spoken language, and he can speak and read French. Henry also exhibits an amazing memory for numbers and staff members' personal information. He has memorized and can recite every teacher's classroom telephone extension and room number. Current information gathered from a review of his record and direct observation indicates that he exhibits behaviors consistent with an autism diagnosis such as over-activity; inattentiveness; running away; anxiety; poor planning; impulsivity; and difficulty with visual-spatial skills, remaining seated, and participating in less preferred activities. He also speaks in a low tone of voice, often mumbles, shows little interest in communicating with others, and needs prompts to speak louder and to look at people. It has been noted that Henry has had some difficulty with transitioning to middle school. His teachers have reported that he has been highly distracted and has a difficult time remaining seated and focused for instruction. When upset about doing an activity, he demonstrates protest behavior such as lying on the ground, making loud crying sounds, and stomping his feet.

Before starting the sessions with Henry, the researcher met with his Special Education teacher to discuss methods and strategies that might help Henry stay on task in order to

participate in the research project. It was decided that the researcher would use a reward system that was being used successfully in his regular classroom. For each two-minute time period that Henry stayed on task or followed instructions, he would earn "coins" that could be traded in for free time on the computer.

Participant 5 – Zoey. At the time of the study, Zoey was a 14-year-old female student in the 8th grade. Zoey had been diagnosed with Pervasive Developmental Disorder (PDD) based on impairments in reciprocal social interaction; impaired verbal and nonverbal communication; and restrictive/repetitive patterns of interests, activities, and behaviors. Zoey is a first-generation American-born Chinese girl; her parents are originally from Hong Kong. Her family speaks Cantonese in the home but English outside the home. It is noted in Zoey's IEP that her difficulties with English and language in general are a function of her autism, not an artifact of her cultural background. She is a very quiet girl and will respond when spoken to with yes or no answers, but she rarely initiates a conversation unless prompted to do so. Zoey does not produce language to continue a conversational exchange, such as making comments, asking for clarification, or asking for details. She will look at an adult when answering questions but otherwise makes very little eye contact. Zoey has occasional verbal outbursts when upset, but these have grown less frequent since she has been in the AS program. Reports document non-compliant behaviors such as yelling; crying; ignoring adult requests; walking away from adults/peers; falling on the floor; moaning; and putting head on the table when stressed by schedule changes, transitions, or requests to complete certain tasks. With the help of calming strategies, Zoey has learned to self-regulate her responses to adverse situations with some prompting. She is also learning to request help when needed. During the study, Zoey was extremely cooperative and willing to do any tasks required of her. She did not exhibit any non-

compliant behaviors, such as the ones noted in her IEP, and showed great interest in using the online card catalog to help her find resources needed for her classroom assignments.

Findings

Each study participant met with the researcher for baseline phase (A), intervention phase (B), and withdrawal phase (A) sessions. The number of times each participant met with the researcher was determined by how quickly he or she completed the task with few or no errors, no need for prompts, and the ability to stay on-task. During initial baseline phase (A) sessions, all participants showed limited ability to complete the 12 steps in the task. In the intervention phase (B), after watching the video in which a peer model demonstrated how to locate a book using the online library card catalog, each participant was able to meet all steps in the task within two to seven sessions. Documentation of participant progress throughout the baseline phase (A), intervention phase (B), and withdrawal phase (A) sessions is presented in greater detail in the figures and tables accompanying the findings for each participant listed below. Figures show the number of steps in the task that the study participants completed independently during each treatment session. Tables provide detailed information about the number of steps each participant was able to complete independently and with verbal and gestural prompts. To be considered independent, each step had to be completed correctly without any prompts given.

The video modeling intervention effectively facilitated the acquisition of the targeted skill for all of the study participants. Each participant completed the study within four to twelve sessions, with one student (Nick) opting to withdraw from the study after achieving the goal in his fourth session. Another student (Tommy) asked to continue meeting with the researcher after completing the withdrawal phase (A) sessions. Although data for the research study was no longer being collected, Tommy, Henry, and Zoey continued to visit the library and work with the

researcher on various skills. Nick and Amanda had limited contact and visited the library only when they needed to borrow books for class assignments. Both were able to use the skills they had learned during the study to locate their books.

Participant 1 – Tommy. Tommy was seen for a total of ten sessions, with one baseline phase (A) session at the beginning of the study to determine his ability to complete the 12 steps of the task independently; six intervention phase (B) sessions that included having him watch the video and then attempt to complete the task; and three withdrawal phase (A) sessions, in which he completed his book searches without the aid of the video (see Figure 4).

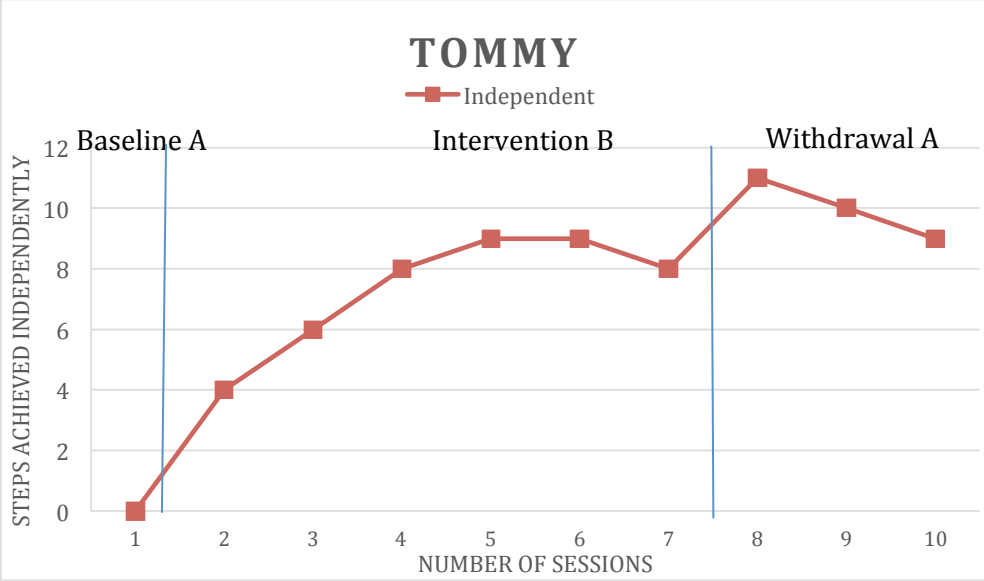

Figure 4. Number of Steps Completed without Prompts by Tommy.

During baseline A (session 1), Tommy was able to complete only two steps – logging onto the computer and accessing the Internet. Tommy was unable to complete any parts of the task independently and required four verbal and one gestural prompts. In the first intervention B (session 2), Tommy was able to complete 11 steps in the process after viewing the video model.

However, during this session, it was necessary for the researcher to provide a total of 15 verbal and gestural prompts (see Table 5).

Table 5

Participant 1 - Tommy - Steps Achieved and Prompts Required for Task Completion

		Baseline A	Intervention B						Withdrawal A		
	Session	1	2	3	4	5	6	7	8	9	10
1.	Log onto school computer by entering your Student number and password	V V V	I	I	I	I	I	I	I	I	I
2.	Open Internet using "Firefox" Internet connection	G V	G V	I	I	I	I	I	I	I	I
3.	Click on link for your school		I	I	I	I	I	I	I	I	I
4.	On school district homepage click on "Library Pages" link		V	I	I	I	I	I	I	I	I
5.	Log onto Library Pages by entering your Student number and password		I	I	I	I	I	I	I	I	I
6.	Click on Destiny Library card catalog link		G	V	I	I	I	I	I	I	I
7.	Type name of book in search box		I	V V G V	I	I	I	I	I	I	I
8.	Click on box with T (search titles)		V	V	I	I	I	I	I	I	I
9.	Find book you want on the search results screen		V	V	V	I	I	V	I	I	I
10.	Click on book title for more information about book		V V G	I	V	V V G	V V	G	I	I	V
11.	Make sure a copy is available – check info on right side of box – "1 of 1 available"		V G V G G V	V V V V V	V V	V V	V V	V	I	V G	G
12.	Write down the call number of the book or print out book record			V V V V G		V V G V	V G V	V V	V	V V	V
	Total steps achieved	2	11	12	11	12	12	12	12	12	12
	Total steps achieved independently	0	4	6	8	9	9	8	11	10	9
	Total prompts needed	5	15	17	4	9	7	5	1	4	3

Note. Prompt Level I = independent; V = verbal; G = gesture.

During the intervention phase (B) sessions, Tommy did not ask the researcher for assistance; instead, when unsure of his next move, Tommy would turn to the researcher and stare until prompted to move along. Tommy's reluctance to request help had been noted in classroom observations by his Special Education teacher, and it was agreed that the researcher would provide Tommy with necessary prompts to avoid frustration but would begin fading out these prompts as Tommy showed confidence in his ability to complete the task.

At the conclusion of session five, Tommy decided that he wanted to borrow a book that he had found during his online card catalog search. With minimal guidance from the researcher, Tommy was able to locate the book he wanted, using the call number he had written down during his search and the call number labels on the book shelves. Tommy's reaction to his accomplishment was to yell, "Yes! Look what I found! I found this one! YES!" After checking out the book, Tommy left the library with these words--"I found it! I found it!"--echoing down the hallway.

It was noted by the researcher that Tommy used only one finger when entering information on the computer. Knowing that Tommy was being instructed in computer keyboarding, the researcher consulted his Technology teacher to ascertain whether he was capable of using all fingers to type. Tommy's Technology teacher indicated that Tommy's ability to use a computer was at grade level and suggested that he be reminded to type the way he was taught in computer class. Although the researcher reminded Tommy to type with all of his fingers during the treatment sessions, Tommy continued to type with only one finger. When he was instructed to type with all fingers, he would do so, but quickly switch back to his one-finger typing. Because he was still able to complete the tasks in a timely fashion, the issue was dropped.

In the final intervention phase (B) session (session 7), Tommy was able to complete the 12 steps in the searching task; eight steps were completed independently (67% accuracy), but five steps required verbal and/or gestural prompts for completion. During the withdrawal phase (A) session (session 8), Tommy was able to complete 11 steps independently (92% accuracy) without watching the video and with only one prompt needed. Session nine was held shortly after Tommy returned from a ten-day spring break. At this withdrawal phase (A) session, Tommy appeared fidgety and distracted and seemed frustrated by the slow computer response time. He was able to complete all 12 steps in the book-search task but required four gestural and verbal prompts. Some of these prompts were a result of Tommy hastily choosing incorrect links that took him to the wrong search screens and the need for the researcher to guide him back to the correct area.

Although a third withdrawal phase (A) session was not planned post intervention, Tommy and the researcher did meet for a tenth time because Tommy pleaded with his classroom teacher to allow him to come to the library. Tommy arrived in the library area and said to the researcher, "Hi, Mrs. M! Are you ready to work?" Seizing the opportunity to work with such an enthusiastic participant, the researcher quickly set up the camera, grabbed her paperwork, and began this final session with Tommy. The session commenced with Tommy verbally asking the researcher for help in getting started. He was able to complete all 12 steps in the book search task with minimal prompting.

Participant 2 – Nick. Nick was seen for a total of four sessions, with one baseline phase (A) session at the beginning of the study to determine his ability to complete the task independently; two intervention phase (B) sessions that included having Nick watch the video

and then attempt to complete the task; and one withdrawal phase (A) session, in which Nick completed his book searches without the aid of the video (see Figure 5).

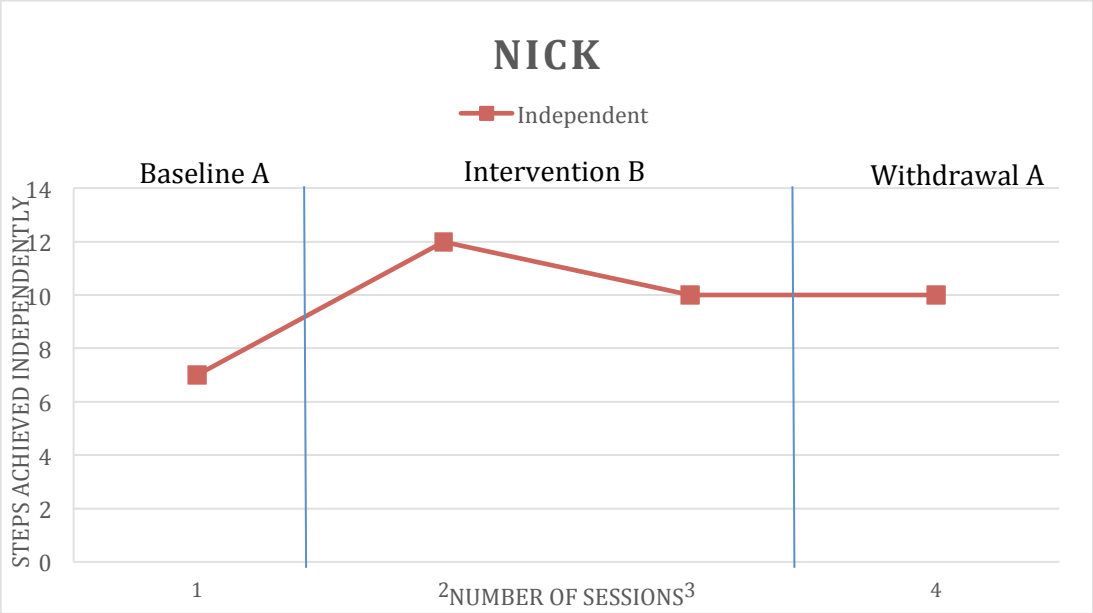

Figure 5. Number of Steps Completed without Prompts by Nick.

During baseline A (session 1), Nick was asked if he knew how to search for a book using the online card catalog. He stated that he did and proceeded to log onto the computer. He then clicked on a shortcut icon for the library card catalog on the computer toolbar at the bottom of the computer screen and searched for a book. When asked how he knew how to do this, he said that he lhad earned it while in elementary school. The researcher then asked Nick if he knew any other way to find book information without using the shortcut link. After several attempts, Nick showed some ability in locating the library card catalog on the computer. However, he was unable to complete a book search or complete the steps outlined in the task process. Because he did not demonstrate an ability to follow the steps needed to complete the entire book searching

process, it was decided that he would continue with the research study in order to master the skills needed for this process (see Table 6).

Table 6

Participant 2 - Nick - Steps Achieved and Prompts Required for Task Completion

		Baseline A	Intervention B		Withdrawal A
	Session	1	2	3	4
1.	Log onto school computer by entering your Student number and password	I	I	I	I
2.	Open Internet using "Firefox" Internet connection	I	I	I	I
3.	Click on link for your school	I	I	I	I
4.	On school district homepage click on "Library Pages" link	V	I	I	I
5.	Log onto Library Pages by entering your Student number and password	I	I	I	I
6.	Click on Destiny Library card catalog link	I	I	I	I
7.	Type name of book in search box	I	I	V V	I
8.	Click on box with T (search titles)	I	I	I	I
9.	Find book you want on the search results screen		I	I	I
10.	Click on book title for more information about book		I	I	I
11.	Make sure a copy is available – check info on right side of box – "1 of 1 available"		I	I	I
12.	Write down the call number of the book or print out book record		I	V G	I
	Total steps achieved	8	12	12	11
	Total steps achieved independently	7	12	10	10
	Total prompts needed	1	0	4	1

Note. Prompt Level I = independent; V = verbal; G = gesture.

When beginning the first intervention phase (B) treatment (session 2), the researcher explained to Nick that he would watch a video of another student looking for a book using the library card catalog and then he should attempt the same activity. After watching the video, Nick turned to the researcher and said: "Alrighty! So let's get started." He then looked directly into

the camera and narrated his own version of the video he had just viewed starting with, "Welcome to the Tutorial for Finding Books at [your] Middle School Library." Nick described the actions he was taking throughout the process, just as the video model had done. He scrolled through the book summary screen and explained for his "audience" where to find information about the book and the call number and how to check for availability. When finished, he turned and asked, "Is that it?" When the researcher said, "Yes" and complimented him on doing such a great job, his only response was, "Uh-huh." The researcher promised to find more difficult searches for Nick to do in future sessions. Nick responded, "Sounds like a lot of fun." He then indicated that he was finished for the day. As he did in baseline phase (A), Nick demonstrated an ability to find a book using the online card catalog during the first intervention phase (B) session. However, he achieved these results using a different sequence of steps than the ones shown by the video model.

At the next intervention phase B treatment (session 3), the researcher directed Nick to watch the video and then perform his own search for a book, following each step that the video model performed. With several verbal and gestural prompts, Nick was able to complete the steps of finding a title, looking at the book summary, and writing down the call number for the book. He did this using the steps demonstrated in the video, which were different from the ones he had used to complete the activity in the two previous sessions. During this session, he was able to complete ten steps in the task independently, with only four prompts needed. The researcher provided Nick with some keyword search terms that were more specific than the broader terms Nick had first entered, such as *a good book*.

During withdrawal phase A (session 4), Nick again looked into the camera and narrated each step in the process of finding a book using the online card catalog. He provided additional

commentary about hardware and software needed to operate the online card catalog system. This information had not been included in the original video, but showed Nick's knowledge and fascination with computers. Nick also showed an alternate method of using the card catalog – clicking on a shortcut icon for the card catalog - which had not been demonstrated in the video. This use of the icon was intentionally omitted from the video instructions because it was only available on library computers, and not accessible when using computers outside of the library area. When asked about his knowledge of the library card catalog system, Nick said that he had learned some of it in elementary school but had not used it until this time. When asked if he would like to continue the research process, he declined saying that he already knew enough and didn't want to continue. This was the researcher's final session with Nick.

Participant 3 – Amanda. Amanda was seen for a total of seven sessions, with one baseline phase (A) session at the beginning of the study to determine her ability to complete the task independently; four intervention phase (B) sessions that included having Amanda watch the video and then attempt to complete the task; and two withdrawal phase (A) sessions, in which she completed her book searches without the aid of the video (see Figure 6).

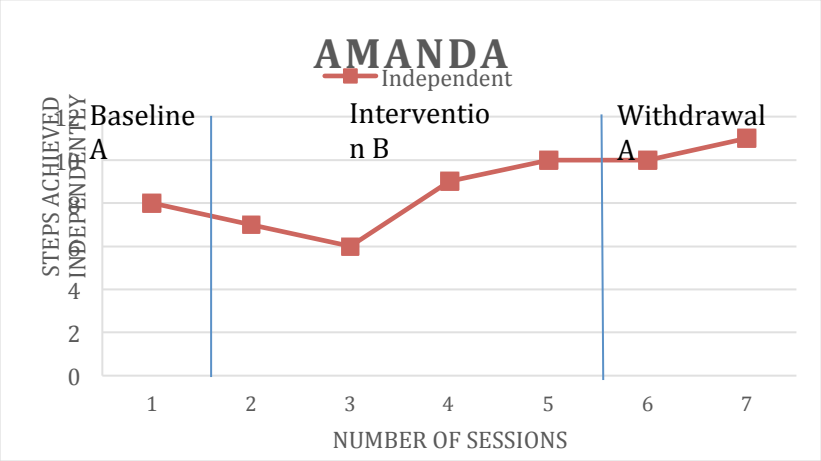

Figure 6. Number of Steps Completed without Prompts by Amanda.

During the baseline phase (A) session (session 1), Amanda attempted to find a book title using the online computer catalog as requested by the researcher. She showed hesitancy in doing the process and frequently said, "I am guessing that I should..." as she completed the steps in the process. During this session, she frequently looked at the researcher for confirmation. Although Amanda was unable to complete the entire task during this session, she was able to complete eight of the 12 steps in the task (see Table 7).

Table 7

Participant 3 - Amanda - Steps Achieved and Prompts Required for Task Completion

		Baseline A	Intervention B				Withdrawal A	
	Session	1	2	3	4	5	6	7
1.	Log onto school computer by entering your Student number and password	I	I	I	I	I	I	I
2.	Open Internet using "Firefox" Internet connection	I	I	I	I	I	I	I
3.	Click on link for your school	I	I	I	I	I	I	I
4.	On school district homepage click on "Library Pages" link	I	I	I	I	I	I	I
5.	Log onto Library Pages by entering your Student number and password	I	I	I	I	I	I	I
6.	Click on Destiny Library card catalog link	I	I	V	I	I	I	I
7.	Type name of book in search box	I	V	V	I	I	I	I
8.	Click on box with T (search titles)	I	I	I	V	I	I	I
9.	Find book you want on the search results screen		V	V	I	I	I	I
10.	Click on book title for more information about book		V V	V	V G	I	V	I
11.	Make sure a copy is available – check info on right side of box – "1 of 1 available"		V	V	G	V V	V	V
12.	Write down the call number of the book or print out book record		V G V	G V	I	G	I	I
	Total steps achieved	8	12	12	12	12	12	12
	Total steps achieved independently	8	7	6	9	10	10	11
	Total prompts needed	0	8	7	4	3	2	1

Note. Prompt Level I = independent; V = verbal; G = gesture.

During the study, Amanda had limited eye contact with the researcher; but she engaged in lively conversations and showed great interest in reading and borrowing library books. Without prompting, she demonstrated extensive background knowledge of various literary genres and expressed her preference for reading fantasy novels.

During the intervention phase (B) sessions, Amanda watched the video and then attempted to do a search for a book on her own. As both Figure 6 and Table 7 show, each time Amanda watched the video, her ability to complete the steps increased and her need for verbal and gestural prompts decreased. At the third intervention phase (B) treatment (session 4), Amanda found a book online that she wanted to borrow. After logging off the computer, she went to the correct shelf and located the book with a minimal amount of guidance from the researcher. After finding the book, Amanda grinned broadly and did a "Victory Dance." During subsequent video modeling intervention sessions, Amanda continued to find books that interested her using the online card catalog and then located them on the library shelves.

At her first withdrawal phase (A) session (session 6), Amanda was asked if she wanted to try doing the task without watching the video first. She shook her head yes and said, "I think I am capable." She was able to complete all 12 steps in the task, ten of them independently (83% accuracy), and needing only two prompts to do so. During the second withdrawal phase A (session 7), Amanda completed all 12 steps (92% accuracy) with only a verbal prompt reminding her to check for book availability. After Amanda had achieved near accuracy with no prompts for two consecutive sessions, the researcher ended this activity with her.

Participant 4 – Henry. Henry was seen for a total of ten sessions, with one baseline phase (A) session at the beginning of the study to determine his ability to complete the task independently; seven intervention phase (B) sessions that included having him watch the video

and then attempt to complete the task; and two withdrawal phase (A) sessions, in which Henry completed his book searches without the aid of the video (see Figure 7).

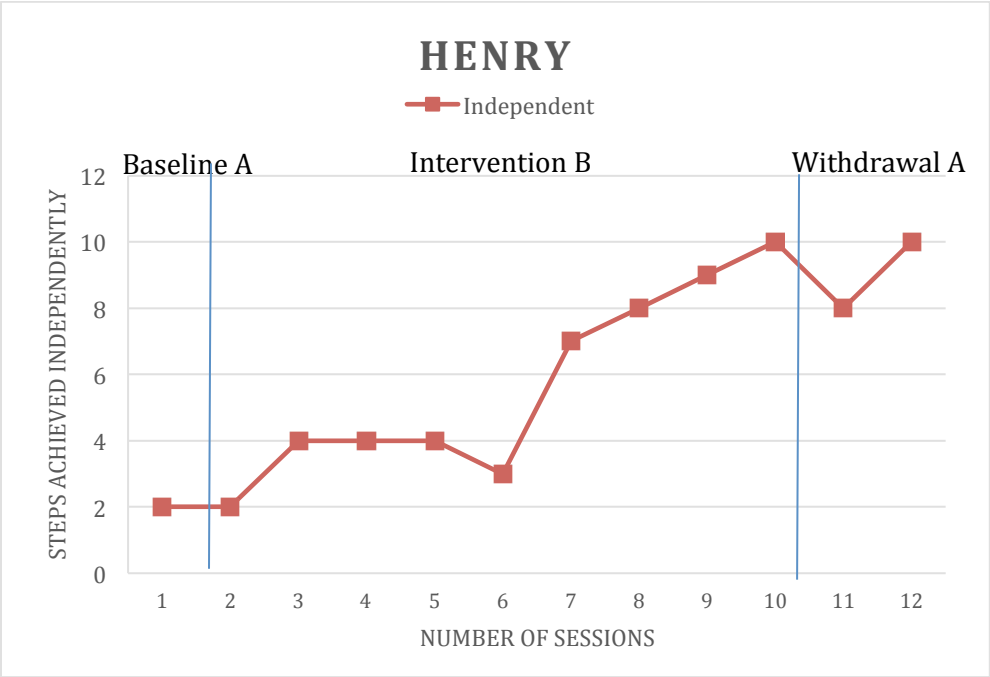

Figure 7. Number of Steps Completed without Prompts by Henry.

In baseline phase A (session 1), Henry was able to achieve only two steps independently – turning on the computer and logging on. He needed three verbal and gestural prompts to reach step four (see Table 8). After watching the video during the first intervention phase B (session 2), Henry completed only three of the 12 steps in the task and required both a verbal and a gestural prompt to do so. In subsequent intervention phase (B) sessions, Henry was able to increase his task achievement but also required additional verbal and gestural prompts. Most of these prompts were given to refocus his attention to the activity at hand. Concerned with Henry's noncompliance and the possibility that he might not be able to continue in the study, the

researcher consulted with Henry's Special Education teacher to find a way to enable his continued participation.

Table 8

Participant 4 - Henry - Steps Achieved and Prompts Required for Task Completion

		Baseline A	Intervention B								Withdrawal A	
	Session	1	2	3	4	5	6	7	8	9	10	11	12
1.	Log onto school computer by entering your Student number and password	I	I	I	I	I	V G	G V	I	I	I	I	I
2.	Open Internet using "Firefox" Internet connection	I	I	I	I	I	G V	V	I	I	I	I	I
3.	Click on link for your school	V G	V G	V V	I	I	I	I	I	I	I	I	I
4.	On school district homepage click on "Library Pages" link	V		V V V G	G	V G	I	I	I	I	I	I	I
5.	Log onto Library Pages by entering your Student number and password			V G V G V	G	V G	I	I	I	I	I	I	I
6.	Click on Destiny Library card catalog link			I	G V	I	V G	I	I	I	I	I	I
7.	Type name of book in search box			I	I	V	V	I	I	I	I	V G	I
8.	Click on box with T (search titles)			V G	V V		V G	I	G V	I	I	I	I
9.	Find book you want on the search results screen							I	I	I	I	V G	I
10.	Click on book title for more information about book							G	V G	G V	I	V G	V
11.	Make sure a copy is available – check info on right side of box – "1 of 1 available"							V G	V G	V G	V	V	I
12.	Write down the call number of the book or print out book record								V V	V	V	I	V G
	Total steps achieved	4	3	8	8	7	8	11	12	12	12	12	12
	Total steps achieved independently	2	2	4	4	4	3	7	8	9	10	8	10
	Total prompts needed	3	2	13	6	5	10	6	8	5	2	7	3

Note. Prompt Level I = independent; V = verbal; G = gesture.

The researcher observed Henry exhibiting behaviors consistent with an autism diagnosis, as noted in his IEP. These behaviors included over-activity, inattentiveness, impulsivity, speaking in a low tone of voice, mumbling, and showing little interest in communicating with the researcher; he required prompts to speak louder and to look in the direction of the camera (for recording purposes). He frequently used echolalia or "scripting" during treatment sessions; he repeated instructions given to him by the researcher and the exact words or phrases used by the peer video model. He also entered nonsense words and strings of numbers in the on-screen search box and was reminded with both gestural and verbal prompts to stay on task. The researcher met with Henry's Special Education teacher and discussed how to encourage Henry to comply with her requests in order for him to continue participating in the research project. It was decided that the researcher would employ a strategy that was being used successfully in his regular classroom. For each two-minute time period that Henry stayed on task or followed the teacher's instructions, he would earn rewards of computer time. This reward system was begun during session six and used throughout the remaining sessions. As can be seen in Table 8, the number of steps Henry completed increased significantly and the number of prompts needed dropped dramatically, once the reward system was employed. During the final three intervention phase (B) sessions (sessions 7, 8 and 9), Henry showed improvement in his ability by completing all 12 steps in the task. Furthermore, his ability to complete steps independently increased while the need for verbal and gestural prompts decreased.

In each of the two withdrawal phase (A) sessions (sessions 11 and 12), Henry was able to complete all 12 steps in the task but showed a disinterest in the activity. During session 11, he completed eight steps independently and needed seven verbal and gestural prompts. At the last session, Henry completed ten steps independently but needed three prompts. During these

sessions, Henry was observed getting up from the computer, moving around the library area, and drawing numbers in the air with his fingers. Most of the prompts were given to redirect his focus back to the task at hand. Because Henry had completed two withdrawal phase (A) sessions, his participation in the study was ended. However, if Henry had not completed the final withdrawal phase (A) sessions, his participation in the study would have been terminated due to his observed lack of interest and refusal to comply with the researcher's requests.

Participant 5 – Zoey. Zoey met with the researcher for a total of 10 sessions, with one baseline phase (A) session at the beginning of the study to determine her ability to complete the task independently; eight intervention phase (B) sessions that included having Zoey watch the video and then attempt to complete the task; and two withdrawal phase (A) sessions, in which Zoey completed her book searches without the aid of the video (see Figure 8).

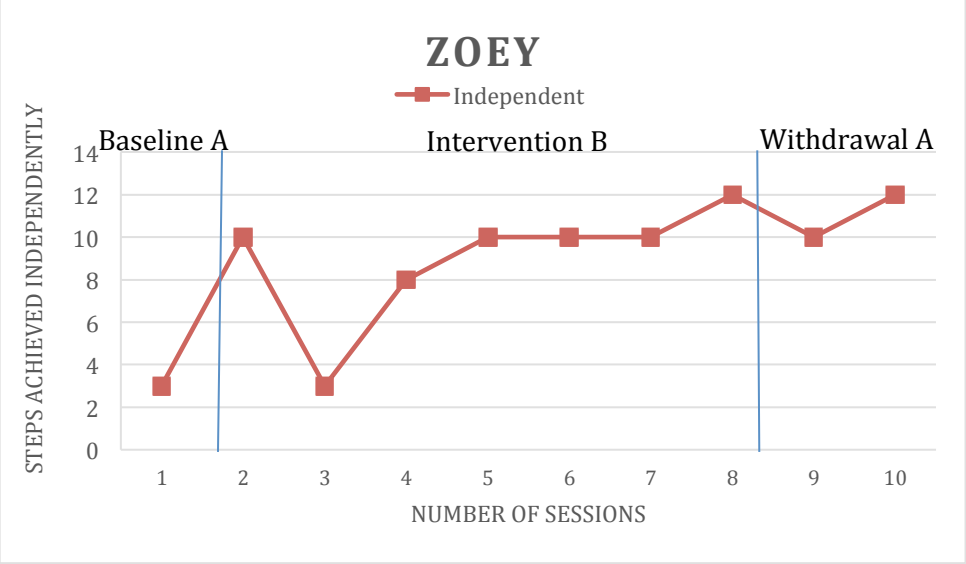

Figure 8. Number of Steps Completed without Prompts by Zoey.

Although Zoey claimed she knew how to locate book information using the school library computer card catalog, she was unable to do so during baseline phase A (session 1), her first session with the researcher. Zoey was able to log onto the school district website but could not locate the correct links and was able to complete only three steps in the task. Despite her inability to find the school library webpage, she did demonstrate good technology and problem-solving skills. When Zoey clicked on the wrong link, she continued to explore the school webpage and found a document that contained information and directions on how to use library resources.

While working with Zoey, the researcher did not observe any of the non-compliant behaviors mentioned in her IEP. Zoey was extremely cooperative and showed great flexibility during the study. However, she did not ask for any assistance when it was obvious that she needed help. Instead, when unsure of how to proceed, Zoey would turn and stare at the researcher, looking for guidance or assurance. The researcher did provide Zoey with gestural and verbal prompts and began fading these prompts as Zoey showed more independence and confidence in her searching skills (see Table 9).

During the first intervention phase (B) session (session 2), Zoey was actively engaged in watching the video that modeled the book-search process. When the video ended, Zoey followed the step-by-step instructions given by the video model and completed ten steps in the task with only two prompts needed. When entering search terms, Zoey chose *easy biography*, *science fiction,* and *fantasy* without prompting by the researcher. When asked why she used these search words, she explained that she was looking for a book for an English class assignment. Although her search terms were very broad, Zoey was able to find two books she was interested in reading. She clicked on the book summary page, as shown in the video, and read the book details. Zoey

did need verbal prompts to remind her to check for book availability and to write down the call numbers for the books she was interested in borrowing. At the end of the session, Zoey looked for both books on the library shelves and, with some guidance, was able to locate and check them out of the library.

Table 9

Participant 5 - Zoey - Steps Achieved and Prompts Required for Task Completion

		Baseline A	Intervention B							Withdrawal A	
	Session	1	2	3	4	5	6	7	8	9	10
1.	Log onto school computer by entering your Student number and password	I	I	I	I	I	I	I	I	I	I
2.	Open Internet using "Firefox" Internet connection	I	I	I	I	I	I	I	I	I	I
3.	Click on link for your school	I	I	I	I	I	I	I	I	I	I
4.	On school district homepage click on "Library Pages" link		I		I	I	I	I	I	I	I
5.	Log onto Library Pages by entering your Student number and password		I		I	I	I	I	I	I	I
6.	Click on Destiny Library card catalog link		I		I	I	I	I	I	I	I
7.	Type name of book in search box		I		V	I	I	I	I	I	I
8.	Click on box with T (search titles)		I		I	I	I	I	I	I	I
9.	Find book you want on the search results screen		I		I	I	I	I	I	I	I
10.	Click on book title for more information about book		I		V	I	I	I	I	V	I
11.	Make sure a copy is available – check info on right side of box – "1 of 1 available"		V		V G	V	V G	V V	I	V	I
12.	Write down the call number of the book or print out book record		V		V V	V	V G V	V G V	I	I	I
	Total steps achieved	3	12	3*	12	12	12	12	12	12	12
	Total steps achieved independently	3	10	3*	8	10	10	10	12	10	12
	Total prompts needed	0	2	0	7	2	6	5	0	3	0

Note. Prompt Level I = independent; V = verbal; G = gesture. *Session 3 terminated due to problems with Internet access.

The second intervention phase (B) treatment (session 3) was cut short before Zoey was able to complete it. Although Zoey was able to sign on to the district website, she was unable to continue with the session because the Internet could not be accessed. Zoey was able to complete only three steps before the researcher ended the session. Although session 3 is included in Figure 8 and Table 9 data, the failure to finish the session can be attributed to technical issues and not to Zoey's inability to complete the task(s).

After watching the video during the next intervention phase B (session 4), Zoey started entering search terms for books needed for her Social Studies class. Zoey was using very broad search terms and getting too many results that weren't specific to her topic. The researcher recommended that Zoey narrow her search by using the term *U. S. Civil War*. With some prompting, she was able to locate several books that worked for her class assignment. With minimal instruction, Zoey was able to locate the Easy Fiction section in the library and find the books she was looking for. She was then instructed to go to the Circulation Desk to borrow those books.

For the remainder of the intervention phase (B) sessions (sessions 5, 6, 7, and 8), Zoey logged onto her computer, started the video, and then followed along simultaneously as the video model demonstrated each step in the book search process. Logging onto her computer before beginning the video minimized the log on wait-time, which was sometimes very long. It also avoided the need to cancel any further sessions due to Internet access problems. During the video modeling intervention phase (B) sessions, Zoey was able to complete all 12 steps in the task with almost all steps being accomplished independently and with minimal prompts needed. In the final intervention phase B (session 8), Zoey completed all 12 steps independently (100% accuracy) and required no prompts to do this.

During her first withdrawal phase (A) session (session 9), Zoey was able to achieve ten steps independently and needed three verbal prompts. At the final withdrawal phase A (session 10), Zoey completed all 12 steps in the task independently and did not require any prompting from the researcher. She was able to complete the session in less than eight minutes. This time included logging on and searching for several books, writing down their call numbers, finding the books on the corresponding library shelves, and checking the books out at the circulation desk. Because Zoey successfully achieved a 100% accuracy rate, this was her final research session.

Student Survey. After each study participant had attended the final withdrawal phase (A) session, he or she was invited to complete a questionnaire to determine his or her perceptions of the effectiveness of the intervention techniques. The survey included six Likert items and one open-ended item. Students were asked to rate their experience in learning the new information literacy skill. Issues explored in this survey included enjoyment of the experience, self-perception on skill acquisition, anticipated use of the skill for future library searches, and the value of this skill in educational pursuits (see Appendix I).

Surveys were completed in paper format with the help of each student's Instructional Aide, when necessary, and returned in a sealed, unmarked envelope to the researcher. Results were tabulated and can be seen in Table 10 below. The results of this questionnaire show that the study participants showed satisfaction with the video modeling with prompts intervention. Most responses recorded were either "agree" or "strongly agree." For questions related to skill acquisition, anticipated use of the skill in the future, and the value of mastering this skill, all responses were positive. Only one student responded, "strongly disagree" when asked whether he or she would use the library card catalog to find books in the future. For the questions

concerning study participants' enjoyment in learning how to use the card catalog and their willingness to recommend using it to their friends, one student responded negatively, while the other four students responded positively. Only one returned survey included a response for the open-ended question indicating an enjoyment of this learning experience.

Table 10

Student Questionnaire Results

	Strongly Disagree	Disagree	Agree	Strongly Agree
Watching the video helped me learn how to search for a book on the computer by myself.	0%	0%	80%	20%
Knowing how to use the library card catalog will help me find information for my school projects.	0%	0%	20%	80%
Knowing how to use the library card catalog will help me find books that I am interested in reading just for fun.	0%	0%	60%	40%
I will probably use the library card catalog again to find books when I want information on a topic.	20%	0%	60%	20%
I enjoyed learning how to use the library card catalog.	0%	20%	40%	40%
I will suggest using the library card catalog to my friends when they need to find a book.	0%	20%	40%	40%

Open ended Question: (Only one response to this question was recorded.)

Please share any other opinions you have about learning how to use the library card catalog.

"I liked learning on the computer."

Summary

This chapter presented the results of a single-subject, multiple case study exploring the effectiveness of using a video peer-modeling intervention with least-to-most prompts to instruct

students with ASD in a key library and information seeking skill. The study sought to determine how this instructional approach affected the outcomes and the experience of students with ASD. The data indicated the intervention improved the study participants' book searching skills. The single-subject observation data for individual implementation of the task indicated an effective intervention. As each participant's ability to complete the twelve steps in the modeled task improved, the researcher was able to decrease the prompts needed by the students and began fading the prompts as the students' skills increased. Furthermore, the Student Questionnaire indicates a high level of satisfaction in using video modeling with prompts to learn this task. This data provides the foundation for the researcher to interpret the findings and results, draw conclusions, present limitations of the study, and provide recommendations for further research in chapter five.

Chapter 5: Interpretation, Conclusion and Recommended Actionable Solutions

Introduction

This qualitative case study evaluated the effectiveness of a video peer-modeling with least-to-most prompts intervention targeting an information literacy skill for students with autism spectrum disorder (ASD) in the school library setting. The following chapter is a summary of this research and presents the interpretation and conclusions drawn from the findings of the study. Possible limitations and implications in relation to students with ASD are discussed, and actionable solutions for future research are recommended.

Interpretation of Findings and Results

The interpretations of the study's findings are presented to evaluate the primary question, how does the use of video modeling accompanied by least-to-most prompting affect the acquisition of library information skills in middle school students with autism spectrum disorder (ASD)? The results support previous studies that used a video modeling intervention as an instructional strategy for to children with ASD (Bellini & Akullian, 2007; Delano, 2007b; McCoy & Hermansen, 2007; Nikopoulos & Keenan, 2004). It also adds to the literature by using a video modeling intervention with least-to-most prompts with students with ASD in a school library setting for information seeking instructional purposes.

During the baseline phase (A), an assessment of each participant's ability to the complete the targeted skill was done. An analysis of these results showed that three of the five study participants (Tommy, Henry and Zoey) showed a limited ability to complete the 12-step task analysis of the information literacy skill of using the online card catalog (see Table 2). Both Amanda and Nick showed a greater ability to complete the task prior to viewing the video, but neither student was able to complete all 12 steps independently. After the video-modeling with

least-to-most prompts intervention phase (B) was introduced, all of the participants exhibited an improvement in their ability to complete the task independently, indicating a functional relationship. After the intervention was withdrawn, all five participants maintained the ability to complete the task independently during the withdrawal phase (A). However, not all participants performed at 100% accuracy during their final intervention phase (B) or final withdrawal phase (A) sessions. Individual learning styles and child characteristics may play a role in these results.

Participant 1 – Tommy. In the baseline phase (A), Tommy was able to complete only two steps: logging onto the computer and accessing the Internet. He was unable to complete either of these steps independently and required five verbal and gestural prompts. This inability to complete the two steps was unexpected because the researcher had observed Tommy successfully using the computer before the research study began. His Technology teacher also verified that he had received instruction in typing and how to access the Internet. In the first two intervention phase (B) treatments (sessions 2 and 3), Tommy watched the video and was able to complete all 12 steps in the task. However, in order to complete the task, he required multiple verbal and gestural prompts. It was observed that Tommy frequently lost track of his next step but often failed to request help from the researcher. Instead, he would stop, turn to the researcher and stare until help was provided. Because Tommy had difficulty in regulating his frustration levels, it was agreed that the researcher would provide prompts to avoid any loss of control or temper tantrums. Most of the prompts during the first three sessions were used to redirect Tommy's attention and to curb his off-task or inappropriate behaviors. During these sessions Tommy was easily distracted, often stared off into space, mumbled and sang to himself, and attempted to hug the researcher and touch her jewelry. These were behaviors that had been identified as an impediment to his learning and documented in his IEP.

Tommy showed a great deal of enthusiasm and excitement in participating in this study. Many of his behaviors were indicative of his diagnosis of autism, and these behaviors appeared to be a reaction to the new stimuli. The researcher consulted with Tommy's Special Education teacher to determine the best way to minimize the negative, off-task behaviors in order to assure Tommy's continued participation in the study. It was decided that the researcher would use the same words used by his Special Education team when these behaviors were observed. He would be reminded of "quiet body" when he became physically overly active and "safe hands" when he attempted to touch the researcher or her belongings.

In the next intervention phase (B) treatment (session 4), the researcher reminded Tommy of "safe hands" and "quiet body" when necessary. Analysis of the data revealed that Tommy had an increase in independent task completion (67% accuracy) during this intervention (B) session and a decrease in required prompts, dropping from 17 (session 3) to only four verbal prompts in session four. Session 5 saw another slight increase in Tommy's need for prompts. He was able to increase his independent step completion to nine (75% accuracy) but needed nine prompts to complete the task. Session 5 was held immediately following a school break. It is believed that the increased need for prompts was caused by Tommy's excitement in returning to the study and not a loss in skill achievement. The need for prompts started decreasing in session 6 of the intervention phase (B), while at the same time, Tommy's ability to complete all 12 steps of the task increased. A visual analysis of Tommy's ability to master the skill indicates that after each viewing of the video model and each set of prompts, he was able to increase his independent completion of the task. He also showed an improvement in his attention to the task and was able to self-regulate his behaviors which allowed for fading of prompts during these sessions. Although Tommy never achieved 100% accuracy in his independent completion of

steps in the task, he was able to achieve a 92% accuracy rate in his first withdrawal phase (A) session (session 8) and an 83% accuracy rate in his second withdrawal phase (A) session (session 9).

Participant 2 – Nick. During the first baseline phase (A) session, Nick completed seven steps in the task independently and needed one verbal prompt to finish an eighth step. He did not complete the entire 12 steps in the task and used a different sequence than the steps outlined in the task analysis. Although the researcher initially met with Nick to obtain his assent and explain what the research process would entail, Nick did not indicate having knowledge of the library online card catalog or receiving prior instruction in its use. Only during this first session, while discussing his ability to complete a book search, did he confide in the researcher that he had learned how to search the online computer catalog while in the fourth grade. Although Nick had been exposed to this activity in the past, because he was taught different steps and did not complete the entire task during baseline phase (A), it was agreed that Nick would continue to participate in the study and use the video model to master the steps designated in the task analysis.

It had been noted in Nick's IEP that he enjoyed using the computer and watching videos and creating his own movies. This interest may explain his behavior during the intervention phase (B) sessions. After watching the video during the intervention (B) treatment (sessions 2 and 3), Nick was "invited" by the video model to attempt the task that she had demonstrated when she asked, "Why don't you try?" At this point, Nick turned to face the camera being used to film the session and began narrating his own version of the video he had just watched. It is unclear whether Nick took the invitation too literally and felt he was expected to create his own video or if his primary interest was in making a video and not learning the task being taught. He

did not show an interest in borrowing books and rarely visited the library after the study. He did, however, offer to help make and star in any future movies the researcher planned on creating. Nick removed himself from the study after only four sessions, telling the researcher, "I think I have learned enough."

Participant 3 – Amanda. Similar to Nick, Amanda was able to complete eight steps of the book-searching task during baseline phase (A). She was able to accomplish this without any prompts but chose each new link to complete the steps hesitantly and volunteered that she was guessing as she did so. When asked by the researcher if she was aware of the online card catalog or had been instructed in its use, she denied knowing about this resource. Amanda's ability to choose the correct links that allowed her to find the library card catalog and use it might be attributed to her family background and exposure to reading and literacy skills. She comes from a family of well-educated people who value learning, with several college professors and advanced degree holders among them. Her IEP indicates parents who have taken an active role in her education and who have supplemented her formal education with extra-curricular activities that focus on academic achievement. During intervention phase (B) sessions, Amanda, who had been described as shy, opened up to the researcher and showed an impressive knowledge of literary genres. She explained that fantasy was her favorite genre because it was mysterious and magical and "...the fictional characters can experience the same things human beings can." She also expressed her enjoyment of unique styles that authors used in writing their books, citing J. K. Rowling and Rick Riordan as favorites.

Amanda was seen for a total of seven sessions. During the first three intervention phase (B) sessions (sessions 2, 3 and 4), Amanda was able to complete all 12 steps in the task but did need several verbal and gestural prompts to do so. The visual analysis of these sessions show

Amanda's increased ability to complete more steps independently and with fewer prompts after each subsequent viewing of the video. In the last intervention phase (B) session (session 5), Amanda completed 10 steps independently (83% accuracy) and required only three prompts. At the end of each video modeling intervention phase (B) session, Amanda used the information she had found on the library card catalog to locate a book she was interested in reading. After logging off the computer she was able to find the books on library shelves with minimal assistance from the researcher.

Based on her progress, Amanda was asked if she would like to attempt the activity without the aid of the video. She responded, "I think I am capable!' She met with the researcher for two withdrawal phase (A) sessions. During the last session, Amanda was able to complete 11 of the 12 steps independently (92% accuracy) and needed only one verbal prompt-a reminder to check for book availability. Although Amanda had not achieved 100% accuracy, it was agreed that her participation would end. Amanda seemed relieved by this decision, and this reaction might be attributed to her anxiousness over the possibility of missing out on any important school activities, which she had discussed at the beginning of the study.

Participant 4 – Henry. Henry was seen for a total of 12 sessions with mixed results. Throughout the intervention treatment Henry exhibited several behaviors consistent with his diagnosis of autism. He showed difficulty in attending to the task at hand, often repeated what the video model or the researcher was saying, or mumbled numbers and nonsense words. When asked to attempt the 12-step task he had seen demonstrated in the video, Henry frequently entered numbers in the Google search box instead of following the procedures to locate a book on the library webpage. He was easily distracted, wrote numbers in the air with his fingers, and needed multiple verbal and gestural prompts to refocus his attention. He was also observed

standing up and walking around the library area before starting the activity. The first several sessions were halted due to Henry's lack of interest in the activity or his refusal to continue.

Because she had consulted with Henry's Special Education teacher and reviewed his IEP, the researcher was aware of the possibility Henry would behave in this manner. In collaboration with his teacher, the researcher adopted a reward system to keep Henry on task during his intervention sessions and to help him self-monitor his behavior. A timer was used to motivate Henry to stay on task and to lower his rates of disruptive behavior. The timer was looped so that a small beep would go off after every two-minute increment. For every two minutes that Henry stayed on task and did not exhibit inappropriate behaviors, he would be given a token. If Henry failed to perform as expected during any of the two-minute spans, he would not be rewarded a token for that time. When he had earned five tokens, he earned five minutes of free play on the computer. This computer time was given after the intervention session had been completed. After the reward system was introduced, a marked improvement in Henry's attention and ability to complete the steps in the task was noted. A decrease in needed prompts was also documented, falling from 13 (session 3) to five (session 5). However, Henry did show an increase in off-task behaviors and needed to be redirected at least 10 times during session 6. As was observed in Tommy, this behavior occurred in the session immediately following a school break. During the remaining intervention phase (B) sessions, Henry showed a greater frequency in reaching the targeted skill with independent step achievement increasing from 25% (session 6) to 83% (session 10). At the same time, Henry's need for prompts dropped from 10 (session 6) to only two (session 10).

In the withdrawal phase (A), Henry again began to display a lack of interest in the activity, with an increased amount of negative behaviors observed in session 11. He required

seven verbal and gestural prompts to complete the task, and his level of independent completion slipped to eight steps or 67% correct. In the final withdrawal phase (A) session (session 12), Henry's independent step achievement did increase to 83 % and he required only three verbal and gestural prompts. During these withdrawal phase (A) sessions, Henry showed signs of boredom and disinterest and refused to comply with the requests of the researcher and the Instructional Aide to remain seated or to attend to the task at hand. Reminders of the token reward system did little to modify his behavior. Because this was Henry's second withdrawal phase (A) session, his participation in the study was ended according to study protocol. However, based on his obvious lack of interest and noncompliance, Henry's participation in the study would have been terminated at this point.

It is unclear as to why video modeling with least-to-most prompting was not as effective with Henry as with the other participants, but several factors may have played a role. Study methods specified continuing intervention phase (B) sessions for two times a week for four weeks (eight total) or until the student was able to complete all steps independently without prompts. Because Henry did not complete all steps without any prompts during his intervention phase (B) sessions, his number of sessions was greater than for the other participants. Although within the parameters of the study protocol, 12 sessions may have been too numerous to sustain Henry's interest. Previous studies have also evaluated the length of the video and the number of treatment sessions in determining the effectiveness of this instructional strategy and found these factors may have a negative impact on some children with ASD (Bellini & Akullian, 2007; Bellini & McConnell, 2010; Buggey, 2005).

A visual analysis of Henry's acquisition of the targeted skill shows that, although he was unable to attain more than an 83% independent completion rate in any intervention phase (B) or

withdrawal phase (A) session, he was able to complete each of the 12 steps independently within different sessions. This may indicate Henry understood how to do each step in the process but was unable to follow through to complete the task. Behaviors noted in his IEP consistent with his autism diagnosis, such as over-activity, inattentiveness, and impulsivity may have played a role in his failure to do so. It should be noted that, when asked to read book summaries in the online card catalog, Henry was able to do so in both English and French, his native language. It is unclear whether Henry fully understood these words or was simply adept at reading them. It is also questionable whether Henry made the connection between the information literacy skill being taught and how it could be used. When Henry located a book in the card catalog, he was asked if he was interested in borrowing it. Unlike other study participants, who found books of interest and borrowed them frequently, Henry usually declined. The researcher suggested books that focused on several of Henry's special interests and was successful in encouraging Henry to borrow books on numbers and telephones. However, Henry showed little interest to seek out books on these topics on his own.

Although not formally diagnosed as hyperlexic, Henry did exhibit several characteristics associated with this condition. Some of the symptoms of hyperlexia include: (a) an ability to read words at an earlier developmental stage than typical, (b) an intense fascination with symbols such as letters and numbers, (c) difficulty interacting with others, (d) echoing what is heard without understanding and, (e) listening to others in highly selective ways (Heflin & Alaimo, 2007; Turkington and Anan, 2007). The researcher found several signs that demonstrate possible hyperlexia: Henry's ability to read in both French and English, his fascination with numbers exhibited by his memorization of the entire staffs' telephone numbers, and his tendency to use scripting or mimicking when being spoken to.

Participant 5 – Zoey. During baseline phase (A), Zoey was able to complete the first three steps in the task independently, a 25% rate of accuracy. Her ability to log onto the computer, access the Internet, and navigate to the school webpage may have been due to her previous exposure to computer usage in technology class. It was also consistent with the other study participants' achievement level during baseline phase (A). After watching the task demonstrated by the video model during the first intervention phase (B) session (session 2), Zoey was able to complete 10 of the steps independently (83% accuracy) while needing only two verbal prompts. During subsequent intervention (B) sessions, Zoey's independent achievement rate fluctuated between 67% and 83% and between a high of seven (session 4) and a low of two (session 5) prompts needed. Most of these prompts were necessitated by Zoey's inability to complete steps 11 and 12 independently, which require searching for the availability of the book and the book's call number. The need for these prompts is consistent with Zoey's documented failure to request help when needed. In spite of Zoey's failure to request help, fieldnotes and videos of the sessions show that, when Zoey was stumped on how to complete a step in the task, she restarted the video and found the section that demonstrated the appropriate process. She then continued on with her task completion. This demonstrates her ability to strategize and independently find solutions to solve problems. In her last intervention phase (B) session (session 8), Zoey did achieve a 100% independent completion rate. It was observed that her need for prompts diminished as her confidence in her abilities grew.

Because Zoey had achieved 100% accuracy without the need for prompts, she was asked to complete the task without the aid of the intervention. During both withdrawal phase (A) sessions (sessions 9 and 10), Zoey performed the task well. In session 9, without the help of the video, Zoey was able to independently complete 10 of the 12 steps and required three verbal

prompts—an 83% accuracy rate. In her final withdrawal phase (A) session, Zoey completed all 12 steps with no prompts offered. Furthermore, at the conclusion of this session, Zoey used the information she had found in her searches to locate two books on the library shelves and checked them out. She did this without any assistance, and the entire session (both the computer search and locating the books) was completed in less than eight minutes.

Although Zoey still showed limitations in her communication skills, her comfort level in using library resources and rapport with the library staff prompted the researcher to invite Zoey to work as a student library volunteer. This proved to be a rewarding venture for all involved. For the remainder of the school year, Zoey visited the library several times a week to help out and proved to be adept at several tasks including alphabetizing books and filing them on the proper shelves after their return. She clearly understood the tasks that were given to her and showed interest in increasing her workload with more difficult assignments. Her ability to do these tasks and her obvious enjoyment of the assignments prompted the researcher to recommend her as a student library volunteer when she was promoted to the ninth grade. This recommendation was also included in the transitional report prepared by her Special Education teacher for her new high school Special Education team.

Student Perception

The second question evaluated in this study was what are the perceptions of middle school students with ASD regarding using a video modeling with least-to-most prompting intervention in the library? It was hoped that answers to this question would provide insight into the participants' experiences in the use of this instructional method and their satisfaction levels.

At the conclusion of the intervention, each participant was asked to complete a survey in order to understand the students' perceptions of using this teaching strategy. The Student

Questionnaire tool (see Appendix I) was used to gather data on the participants' enjoyment of this activity, their self-perception of skill acquisition, whether or not they might use this skill in the future, and how much they felt this skill would aid them in their academic pursuits. Although the researcher emphasized the voluntary nature of the survey when inviting students to complete it, the return rate was 100 percent. Surveys were returned to the researcher in unmarked envelopes to maintain confidentiality. As specified in the study protocol, any student needing assistance in completing this form would be helped by his or her Instructional Aide. Although the researcher does not have documentation of how many students received assistance in the completion of these forms, it is expected that several participants did have help from their Instructional Aides. Because the researcher had close working relationships and good rapport with all of the Instructional Aides involved in this study, it is possible that some of the student responses may reflect the Aides' desire to help assure good study results by influencing the students to choose positive responses. However, triangulating data from fieldnotes, reflective memos, and videotapes of the intervention sessions provides further evidence that the students' experiences during the study were positive and supports the positive data gathered from the Student Questionnaire.

Results of the student survey show a high level of satisfaction with the video modeling with least-to-most prompting process, with the majority of positive responses in the "strongly agree" or "agree" categories. Only one "strongly disagree" response was given to the question concerning the respondent's willingness to use the online card catalog for future educational purposes. Two "disagree" responses were recorded to the questions of enjoyment in using this resource and sharing this resource with friends.

In addition to the Student Questionnaire data, the researcher assessed student satisfaction with the video modeling intervention using several other tools. Fieldnotes and reflective memos completed by the researcher during and after each video modeling session documented student excitement and positive comments about the activity. Anecdotal evidence obtained from several of the participants' teachers and aides suggested an eagerness to go to the library for their scheduled sessions and an upswing in positive behaviors after most sessions. However, the strongest documentation supporting participant satisfaction is the visual evidence contained in the videotapes of each session. As mentioned previously, every session for each of the five participants was recorded with a camera, with a total of 43 taped sessions. These tapings were then uploaded to the researcher's personal computer, transcribed verbatim, and analyzed using Transana© software. Transcription included documenting all verbal interactions between the study participant and the researcher and included facial expressions, sounds, gestures, and physical actions. Videotaping of the participants allowed for multiple viewings of each session and provided the researcher with additional insights into behavioral and learning issues that were not easily captured in fieldnotes. Because the researcher sat beside each participant during the session, she did not always see the participant's face. The camera used in the video tapings was aimed directly at the participants' faces and often detected facial expressions, gestures, and verbal utterances that were not easily observed by the researcher. Careful viewings of each session provided additional information that confirmed or refuted the researcher's fieldnotes and reflective memos.

During each of the intervention sessions, the participant watched the video with a peer demonstrating the 12-step task to be learned. At the start of the video, the model spoke directly into the camera saying in a friendly tone, "Hi, I'm Sarah. And I want to find a good book to

read." Examination of the videos shows a positive response to this opening line with a nodding of the head, smiles, repeating "Hi" or the entire sentences spoken by the video model. While they watched the video, the participants could be seen nodding, smiling and sometimes commenting on Sarah's narration. Each participant was observed paying close attention to the video throughout the study sessions. Even Amanda and Zoey, both of whom usually avoided eye contact when interacting with others, were seen staring directly at the video model throughout the video, smiling and nodding in agreement at Sarah's comments. At the end of the video when Sarah invites the viewer, "Why don't you try looking for a book with the computer?" the participants frequently smiled and nodded or made statements such as, "Okay, let's get started!" or "Alrighty!" All the participants took Sarah up on her invitation and began their own book searches.

Discussion

The current study extends previous research studies comparing the effects of video modeling on acquisition of academic skills in students with ASD (Delano, 2007a; Karohara et al., 2011; Kinney et al., 2003; Knight et al., 2010; Pennington, 2010). The results of this study suggest that video modeling with least-to-most prompting was successful in teaching the five participants to access the online library card catalog to help them select books for academic and leisure activities. The video modeling intervention effectively facilitated the acquisition of an information seeking skill and contributes to the literature on school library instructional strategies for students with autism.

It is impossible to provide data that skills were maintained by any of the participants because the study did not include a formal assessment of skill maintenance after the final Withdrawal A session. However, anecdotal evidence suggests that three of the five participants

were able to maintain the skills learned in this intervention and use it in their academic pursuits. At the conclusion of the study, the researcher (the school librarian) invited all the participants to help in the library as student volunteers. Only Henry and Zoey accepted this offer. After Nick removed himself from the study at the end of session 4, he did not visit the library or borrow any books for classroom assignments or personal interests. Amanda's visits to the library were sporadic. She did borrow a few books from the library and used the card catalog to locate them but often claimed that she was still reading a book and wasn't ready to get another one. Conversations with her mother confirmed Amanda's access to books at home, which lessened the need to borrow from the library. Both Tommy and Zoey made extensive use of the library collection. Each of them continued to borrow several books a week from the library and often used the card catalog to find specific titles. Tommy was fond of Garfield cartoons and often went directly to the shelf to find what he wanted to read. Zoey borrowed extensively from the collection and chose non-fiction books for classroom assignments and fictional books for leisure reading.

Henry continued to visit the library but usually declined to borrow books. He did show enjoyment in helping with various tasks assigned to him as a library helper and was especially fond of using a labeling machine to print out signage for library shelves. His resisted all attempts to teach him how to find books on shelves or how to return books to their proper shelves. Zoey proved to be an excellent worker and easily learned several book-processing skills that made her a true asset to the student volunteer program. Her eagerness to learn was evident in her quick acquisition of the skills needed to organize books and return them to their correct library shelves or carts.

Throughout the study, the researcher maintained constant contact with the staff in the Special Education department. The researcher frequently consulted with the staff to gain a better understanding of the issues associated with working with students with ASD and adapting instruction to enhance their learning experiences. Collaboration resulted in adjustments to the study intervention sessions with the implementation of techniques that addressed specific characteristics and behaviors of the participants that were impeding their progress. Understanding each participant's learning style, being aware of sensory stimulators that might trigger temper tantrums or shutdowns, and using common terminology and a timer system to encourage self-regulation were all management strategies shared with the researcher. These collaborative efforts proved to be invaluable in the conduct of the study.

Although this study focused on the use of a video modeling intervention with least-to-most prompts in a school library setting, it could be easily adapted to provide instruction to students with ASD in other classroom settings. The strategies used in this research could be implemented across educational settings that provide inclusionary instruction for students with ASD. Teachers of Special content areas such as Art, Music, Technology, Physical Education, and Family and Consumer Science programs often struggle to find effective teaching strategies that help students with autism successfully master the skills being taught in their classrooms. Deficits in fine motor skills, visual-motor skills, and sensory arousal sensitivity often cause students with ASD difficulty in their ability to participate in art, music, and physical education classes (Heflin, & Alaimo, 2007; Turkington & Anan, 2007). Previous studies have used video modeling interventions to teach painting to students with autism (Chan, Lambdin, Van Laarhoven, & Johnson, 2013); grocery shopping, meal preparation, washing dishes, and other life skills (Ayres & Cihak, 2010; Mechling, 2004; Mechling, Ayres, Bryant, & Foster, 2014;

Murzynski & Bourret, 2007); listening to music for leisure purposes (Chan et al., 2013; Hammond, Whatley, Ayres, & Gast, 2010); basketball skills (Lo, Burk, & Anderson, 2014); and internet use (Zisimopoulos, Sigafoos, & Koutromanos, 2011).

Collaboration with Special Education teachers to understand the needs of students with ASD and staff development class offerings in the use of video modeling and technology use can provide content area teachers with the tools they need to make the educational experiences of their students with ASD effective and rewarding.

Limitations of Study

As with any research study, this qualitative case study had several limitations that have been identified by the researcher.

The sample size for data collection was limited, with only five students with ASD participating. Of the five participants, analysis of the data shows that only three (Tommy, Amanda, and Zoey) successfully completed the study; Henry completed the study, but his non-compliant behaviors contributed to mixed results; Nick withdrew from the study voluntarily. All study participants attended the same suburban middle school and were enrolled in a Special Education program with excellent resources and staff. However, the students were mixed by gender, grade level, and formal diagnosis; their demographic characteristics were fairly representative of the population of children with ASD. Although five is a reasonable number of participants for a multiple single-subject case study, it is not possible to generalize the results to the ASD population as a whole. To facilitate generalization of the results of this study, replication is necessary in order to provide conclusive evidence that video modeling intervention is an effective instructional strategy for students with ASD. According to Bloomberg and Volpe (2012), generalization in case study research is not the goal. Rather transferability, which allows

for "...understanding and knowledge to be applied in similar contexts and settings" (p. 31). The researcher has provided rich narrative details describing the study that allow for transferability (Bloomberg & Volpe, 2012; Maxwell, 2005; Merriam, 2009).

A second limitation encountered in this study was the difficulty of controlling for prior learning behaviors. All five participants had taken a computer technology class and were familiar with logging onto the computer with their identification numbers (ID) and passwords. They had been taught how to access the Internet by their Technology teachers and demonstrated various ability levels navigating through websites. Their prior knowledge was evident in their independent completion of the first several steps in the task starting with their first session, baseline phase (A). Tommy was the only participant that needed prompts to complete the initial steps during the baseline phase (A), and this can be attributed to his excitement and over-stimulation related to this newly introduced routine. Zoey completed three steps independently. Henry completed two independently and another two with gestural and verbal prompts. This level of performance is consistent with their ability to log onto the computer and use their IDs and passwords to access the Internet. Both Amanda and Nick were able to complete eight steps during baseline A, prior to viewing the video demonstrating the task. Amanda was hesitant in taking each step and frequently commented on the fact that she "guessed" she was selecting the correct link. Because there was no evidence that Amanda had received any prior training in using the online card catalog, her ability to navigate through the website may be the result of her exposure to reading materials which helped her to guess what information was needed to complete the task. Nick was the only student who acknowledged previous instruction in this task. Because of the difficulty in controlling for prior learning histories, future researchers may consider conducting similar studies involving younger children whose histories show no

instruction in this skill, which would provide greater control over previous exposure to this activity.

The use of the Student Questionnaire, completed by the study participants at the conclusion of the intervention, posed another possible limitation. This tool was to be completed voluntarily and anonymously only by willing participants. The survey questions were written at the students' reading level, but might have been above their comprehension level. For this reason, the Instructional Aides that accompanied each student during sessions were recruited to help. Each Aide agreed to assist the students if they had any difficulty in completing the survey. Although the Aides were instructed to help the students with comprehension difficulties only, it is possible that their personal bias may have influenced the more positive answers. For future studies it may be possible to create a more functional tool to assess the social validity of this intervention. However, due to possible delays in reading comprehension with persons with ASD, the use of this tool may be inherently flawed. In order to confirm or refute the validity and reliability of this survey tool, it is recommended that triangulation of data be used to minimize this limitation.

Interruptions to scheduled treatment sessions also proved to be a limitation to this study. School closings, vacations, holidays, and the administration of school-wide national testing assessments during the research study created difficulty in providing treatment in a consecutive and consistent manner, as planned in the study's stages of implementation (see Table 1). The researcher attempted to minimize delays by scheduling the intervention treatment during the early part of the Fall semester of the school year - when there were few holidays, no formal state assessments planned, and with little threat of weather-related closings. Unfortunately, obtaining permission to conduct the study required more time than expected and caused postponement of

the study to a busier time in the school year. Two participants (Tommy and Henry) did exhibit a higher level of distraction and excitability in their sessions immediately following school closings or testing periods. Tommy and Henry required additional verbal and gestural prompts to complete the task and these prompts were given to redirect their attention to the task. Even though each of these students was inattentive and easily distracted during the sessions immediately following a school break, neither showed any loss of learning or significant loss in skills when observed in treatment sessions. It should be noted that Nick, Amanda and Zoey did not demonstrate any loss of learning and did not need additional prompts when session delays occurred. This data might be a result of Tommy and Henry's ability to be easily distracted and over-stimulated. Future researchers should carefully plan any research around the school calendar, which is often published a year in advance in order to limit this affect in students with ASD that are prone to distractibility.

Recommendations for Further Research

This study represents one of the first studies to evaluate the efficacy of using a video modeling intervention in a school library setting to teach students with ASD an information literacy skill. Few video modeling research studies have been undertaken to evaluate the use of video modeling accompanied by least-to-most prompting as an instructional strategy for the delivery of library curriculum to students with ASD. This study contributes to a gap in the literature and offers several suggestions for future research.

First, the study should be replicated using larger groups of participants from different grade levels and skill sets. These studies would add to the literature and support the effectiveness of using video modeling techniques in library instructional programs. The replication of these studies using different grade levels and skill sets would also control for prior

learning histories and generalization or transferability of these skills. These studies should also include an assessment the maintenance of skills after the final withdrawal phase.

The task undertaken in this study was a basic skill that is often one of the first lessons taught to students using library resources. Follow-up lessons teaching students how books are arranged on library shelves using the Dewey Decimal system and how to find the books in their physical location are a part of library instructional programs. Cihak and Schrader (2008) reported success in the use of video modeling to teach two chained vocational skills to students with ASD. The use of chained activities should be explored to extend this task to include additional instruction that would allow students to become more independent users of library resources. The current study could be adapted to teach both the skill of locating information about library books and then the physical process of locating the books on the library shelves in a chained task sequence. Other academic skills requiring a chained sequence of events could also be studied to determine the effectiveness of this instructional strategy.

In this study, the video modeling intervention was introduced in conjunction with the use of least-to-most prompting. Prompting after a five-second delay was included in the study protocol to facilitate the learning of the skill and to minimize frustration for the participants. As Kagohara (2010) noted, when these two instructional techniques are introduced simultaneously, it can be difficult to determine whether either strategy used alone could result in the positive effects documented during the study. Several studies (Bellini & Akullian, 2007; McCoy & Hermansen, 2007; Mechling, 2005; Nikopoulos & Keenan, 2004) question the effectiveness of video modeling interventions when used in conjunction with other instructional methods such as least-to-most prompting. However, Ayres and Langone (2006) and Delano (2007b) report on two video modeling interventions that were successful when other instructional approaches were

included in the intervention design (Alcantara, 1994; Apple, et al., 2005). Future studies might investigate the efficacy of combining video modeling with other instructional strategies in order to determine whether additional instructional techniques, such as verbal and physical prompting, facilitate skill acquisition better than the use of video modeling alone.

The researcher selected a library informational skill that was part of the library curriculum that required mastery at the middle school level. After consulting with Special Education teachers and determining that the students eligible to participate in this study lacked the knowledge to accomplish this skill, a task analysis was created. Future studies might take into account the learning preferences and interests of the students, as well as the school curriculum, when determining instruction delivered through video modeling interventions. Kagohara (2011) discusses the use of a stakeholder questionnaire administered to participants to identify their preferred methods of instructional delivery and what they wanted to learn how to do. Their responses were incorporated into the intervention phase of the study and provided an opportunity for participant input. Additional studies incorporating the use of a stakeholder questionnaire support the use of this pre-treatment tool (Kagohara et al., 2011). Future studies using a stakeholder questionnaire prior to implementation may provide insight into pre-treatment skills or knowledge of the topic being studied, increase stakeholder interest in the study, motivate active participation, and match students with the video modeling intervention that is best aligned with their learning needs and abilities.

Summary

Current research and literature on the efficacy of video modeling used in instructional strategies for students with ASD is still emerging, with most studies focusing on social and behavioral issues (Ayres & Langone, 2007; Bellini & Akullian, 2007; Buggey & Hoomes, 2011).

This study is one of only a few that have investigated the use of video modeling in a school library setting to deliver curricular instruction. Additionally, it introduces a video modeling intervention with least-to-most prompts with students with ASD for information seeking instructional purposes. However, a gap still exists in the area of literacy information skills training for students with ASD.

There is a need for more research to be conducted in this area. The resulting evidence will assist school librarians in performing their duties at optimum level, while enhancing their library instructional program offerings to assure resources and training are available to empower learners and prepare them for future academic endeavors using 21st-century literacy skills: digital, visual, textual, and technological (AASL, 2009; Ennis-Cole & Smith, 2011). By accessing workshops and training programs such as Project ENABLE (2014) and implementing action research projects in their library classrooms, school librarians will position themselves as school leaders and valuable members of the educational team (Ennis-Cole & Smith, 2011; Farmer, 2009).

Advances in technology have made user-friendly equipment and software readily available and reasonably priced. Taking advantage of these technologies, a school librarian or other classroom instructor can easily implement single-case study designs using a video modeling with least-to-most prompting intervention for their students with ASD. Use of this strategy can save time, assure consistency in the delivery of the components of the lesson, provide students with ASD a level of independence, and offer students a preferred mode of delivery. As suggested by Whittington-Barnish (2012), this intervention could be extended to larger groups or whole classrooms creating a more efficient delivery of instruction, when applicable.

School environments, including the school library, must allow for physical and intellectual adaptations to provide educational opportunities for all students, including students with ASD and other conditions (Ennis-Cole & Smith, 2011; Erickson et al., 2010; Gavigan & Kurtts, 2009). This can be accomplished only through the collaboration of all members of the school community including regular and Special Education teachers and staff, school librarians, and school administrators (Farmer, 2009; Farr, 2004; Hopkins, 2005; Loveday, 2011; Monteil-Overall, 2005a, 2005b; Murray, 2002). Opportunities to receive training and to collaborate with others members of the school staff to enhance educational programs for students with ASD should be actively pursued by school librarians and supported through staff development programs offered by school district administrators. Proactive efforts on the part of school librarians will help them to uphold the mandate set forth in the School Library Bill of Rights which emphasizes the role of the school librarian in reaching out to persons with disabilities and in assuring the equitable availability of resources which best suits their needs.

When asked to explain how to go about providing effective library services to students, Dr. Jacqueline Mancall (1933-2013), a leader in the field of Library Science and professor, and professor emeritus in the School Library program at Drexel University, offered the following advice to pre-service librarians, "You be the Change Agent!" These words of wisdom encouraged many school librarians to dedicate their careers to do their best to advocate for all of their students.

This advice is still a powerful reminder that librarians and other members of the educational community have both the power and the obligation to BE THE CHANGE AGENT.

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Appendix A

Subject Initials_____

"Drexel University"

Permission to Take Part

In a Research Study

1. Subject Name: _____

2. Adult Authorized to Grant Permission for Minor's Participation in a Research Study:

   _____

3. **Title of Research:** Video Modeling Interventions for Students with Autism in the School Library Setting

4. Investigator's Name: Patricia T. Markey

5. Research Location: Welsh Valley Middle School Library, Narberth, PA

6. Consenting for the Research Study:

   This is a long and an important document. If you sign it, you will be authorizing Drexel University and its researchers to perform research studies on your child. You should take your time and carefully read it. You can also take a copy of this consent form to discuss it with your family member, attorney or any one else you would like before you sign it. Do not sign it unless you are comfortable in permitting your child to participate in this study.

7. Purpose of Research:

You are being asked to allow your child _____ to participate in a research study. The purpose of this study is to evaluate the effectiveness of implementing a video modeling intervention strategy within a school library setting to teach an information literacy skill to students with autism spectrum disorders (ASD).

Your child has been invited to participate in this research study because it has been determined that he/she currently receives support and services from the school district Autistic Support Program, has an IQ within the normal range, and can read at or above a 2nd grade level and therefore meets the criteria for participation in this study. Any student that did not meet these criteria, were excluded from consideration to participate in this study.

Patricia Markey, the librarian at [redacted] Middle School, who is currently a doctoral candidate in the School of Education at Drexel University, is conducting this study as partial fulfillment of her doctoral dissertation requirements. Data collected during the research study will be analyzed and presented as part of the researcher's doctoral dissertation.

Four other students will be involved in this case study research project. However, each of the students will participate in these activities during private sessions that do not include the others. Students will not be informed of the other students' activities while participating in this study in order to maintain confidentially and privacy for each student.

Although your child's teacher and school administrators may know that your child is participating in the research study, no specific information concerning your child or his/her participation in this study will be shared with them.

During this research study, your child will be videotaped while he/she completes the activities involved. These videotapes will help the researcher (Mrs. Markey) review the activities that have taken place so that the information can be reviewed and analyzed. The researcher will be the only person permitted to view these videotapes.

At the end of the research study, your child will be asked to complete a questionnaire that asks his/her opinion of the activity.

8. PROCEDURES AND DURATION:

You understand that the following things will be done to your child:

- Your child will come to the school library two days a week during homeroom period or another time that has been arranged with the classroom teacher.
- The research activity should take approximately 20 minutes for each session and the study should last for 6 weeks, for a total of 12 sessions.
- Your child will be instructed to watch a video that shows another student completely a library information seeking activity using the school computer and library collection software.
- Your child will then be asked to attempt to imitate the activity that the other student demonstrated on the video.

- Your child will be observed as he/she attempts to complete this activity independently.
- Data will be gathered on the number of steps your child was able to complete independently during each session.
- In order for the activity to be fully analyzed for research purposes, your child will be videotaped while participating in this research study. These videotapes will be used to complete observation forms to document the activities that take place during each session.
- At the completion of the video intervention sessions, your child will be asked to complete a questionnaire that contains 7 questions. If your child has difficulty reading or understanding this questionnaire, assistance will be available.

Involvement in this study will be confidential and no student names or other identifiers will be used once data has been collected. No one, except for the researcher (Mrs. Markey), will be permitted to look at the videotapes made during this research study. All data collected during the research study will be kept in a secure location and will not be accessible to anyone except Mrs. Markey. All records associated with this study, including the videotapes, will be safely stored for the recommended retention period and then destroyed by the researcher.

Participation in this study is completely voluntary and will not affect the your child's academic grade or class standing in any way.

9. RISKS AND DISCOMFORTS/CONSTRAINTS:

Risks and discomforts/constraints should be minimal or non-existent for your child during the research activity. Because the activity will take place in the school library during your child's homeroom period, he/she may experience a minor change in daily routine. However, all precautions will be taken to avoid loss of class time or any other important school activity. Your child's classroom teacher will be consulted to assure a minimal disruption to your child's schedule. Any scheduled research session that is in conflict with an event or activity that your child should or would like to participate in will be rescheduled at a more convenient time.

10. UNFORESEEN RISKS:

This study should pose no risks to your child. However, if unforeseen risks are seen, they will be reported to the Office of Regulatory Research Compliance immediately**.**

11. BENEFITS:

There may be no direct benefits from participating in this study.

12. ALTERNATIVE PROCEDURES:

The alternative is not to participate in this study.

13. REASONS FOR REMOVAL FROM STUDY:

Your child may be required to stop the study before the end for any of the following reasons:

a) If participation in the study is adversely affecting your child's academic performance.
b) If your child fails to adhere to requirements for participation established by the researcher.
c) If your child shows any discomfort or stress while participating in the study.

14. VOLUNTARY PARTICIPATION:

Volunteers: Participation in this study is voluntary, and your child can refuse to be in the study or stop at any time. There will be no negative consequences if he/she decides not to participate or to stop.

15. RESPONSIBILITY FOR COST

There should be no costs involved in this study. However, any costs associated with the implementation of this study will be the responsibility of the researcher.

Subject Initials_____

16. CONFIDENTIALITY:

In any publication or presentation of research results, your child's identity will be kept confidential, but there is a possibility that records which identify your child may be inspected by authorized individuals such as representatives of the institutional review boards (IRBs), or employees conducting peer review activities. You consent to such inspections and to the copying of excerpts of your records, if required by any of these representatives.

17. OTHER CONSIDERATIONS:

If you wish further information regarding your child's rights as a research subject or if you have problems with a research-related injury, for medical problems please contact the Institution's Office of Regulatory Research Compliance by telephoning 215-255-7857.

18. PERMISSION:

- I have been informed of the reasons for this study.
- I have had the study explained to me.
- I have had all of my questions answered.
- I have carefully read this permission form, have initialed each page, and have received a signed copy.
- I give permission voluntarily.

_____

Family Member or Legally Authorized Representative Date

_____

Investigator or Individual Obtaining this Permission Date

_____

Witness to Signature Date

List of Individuals Authorized to Obtain Permission

Name	Title	Day Phone #	24 Hr Phone #
Patricia T. Markey	Researcher/ School Librarian	610-[redacted]	267-[redacted]

Subject Initials ----------

Appendix B

"Drexel University"

ASSENT FORM FOR CHILDREN/MINORS IN A RESEACH STUDY

You are being asked to participate in a research study. This study seeks to identify your ability to learn a new library information skill by watching a video of another student complete an activity using a school library computer and then attempting to perform it yourself. You will be asked to participate in this research two times a week for about one month. The activity will take place in the school library and should take about 20 minutes to complete each time. During this research study, you will be videotaped while you complete the activities involved. This videotape will help the researcher (Mrs. Markey) review the activities that are taking place so that the information can be analyzed. At the end of the research study, you will be asked to complete a questionnaire that asks your opinion of the activity. Data collected from the activity sessions and the questionnaire will then be analyzed and presented as part of the researcher's doctoral dissertation.

Involvement in this study will be confidential and no student names or other identifiers will be used once data has been collected. Your parents and your teacher will know that you are participating in this research study, but your results will not be shared with them. No one, except for the researcher (Mrs. Markey), will be permitted to look at the videotapes made during this research study. Participation in this study is completely voluntary and will not affect the your academic grade or class standing in any way.

Child's Assent: I have been told about the study and know why it is being done and what to do. I also know that I do not have to do it if I do not want to. If I have questions, I can ask Mrs. Patricia Markey. I can stop at any time.

My parents/guardians know that I am being asked to be in this study.

_____

Child's Signature Date

List of Individuals Authorized to Obtain Assent

Name	Title	Day Phone #	24 Hr. Phone #
Patricia T. Markey	Researcher/ School Librarian	610-[redacted]	267-[redacted]

Appendix C

No. 244 Educational Research Involving District Students Permission Form

[redacted] **SCHOOL DISTRICT**

[redacted]**SD** Date_____

Research Projects
DATA SHEET
TITLE OF STUDY_____

_____

APPLICATION FOR APPROVAL OF RESEARCH/EVALUATION PROJECT

Name of Applicant: _____

Local Address: _____

_____ Zip Code

Telephone Number(s):_____

Name and Title of person conducting the study: _____

Name and Title of person supervising the study: _____

Proposal (summary of purpose and procedures) attached: _____ yes _____ no

Number of Pupils involved in the study:_____ Grades: _____

School(s) involved in the study:_____

Approximate time required to conduct the study:_____

Personnel required to conduct the study:_____

Procedure for obtaining parental permission attached: _____ yes _____ no

Note: Parental permission is required for any research involving pupils.

Applications should be submitted to the Assistant Superintendent, [redacted] School District Administration Building, [redacted] Montgomery Avenue, [redacted], PA [redacted]

_____ Date of approval by [redacted] School District

_____ Date of approval by school(s) involved in the study

EDUCATIONAL SERVICES
610-[redacted]-[redacted]
4/21/08

[redacted] SCHOOL DISTRICT
Research Projects in the Schools
REQUIREMENTS

Statement of the Problem

1. Purpose: State briefly what you are trying to determine through the research project.

2. Justification: Explain why you feel the problem is significant and why the school system should become involved.

Hypothesis

Briefly state the question(s) to be answered or the hypotheses to be tested by the study.

Procedure

1. Sampling: Give the number of pupils, classes, schools, grades and/or subjects and teachers to be involved in the study.

2. Collection of Data: What data are to be collected and how? Will you use standardized tests, interviews, observations, questionnaires, etc.? Describe any testing instruments you have constructed (attach a sample, if available).

3. Analysis of Data: How will you analyze the data you collect to test the hypotheses or answer the questions? Will there be percentage reporting, statistical analyses, etc.?

4. Approximate Time Required: Define the time required for each phase of the study, and estimate the total time you will need. If there are dates by which you must begin or complete the project, specify them.

Personnel and Facilities

1. Personnel: Who will conduct the study?

2. Time Schedule: Estimate student time and teacher time that will be required for the study.

3. Facilities: Describe what space, equipment, etc., you will need for the study.

Abstract of the Proposed Study

Briefly (approximately one-half page) describe the proposed study in layman's terms. The abstract will be used by the school district to describe the project once it is approved.

Information specified above must be provided with the application for approval.

Abstract of the Completed Study

Modify the abstract of the proposed study to include its findings and recommendations. The abstract will be used by the school district to describe a recently completed project.

Appendix D

School District Research Study Approval Letter (redacted)

School District
Ave. , PA -3399
Phone: ♦ Fax: ♦ www. .org
, J.D., Ed.D. ♦ *Assistant Superintendent of Schools*

November 16, 2012

Patricia T. Markey
221 Montgomery Avenue
Oreland, PA 19075

Dear Ms. Markey:

Approval has been granted for Patricia Markey to complete her research study, Video Modeling Intervention for Students with Autism in the School Library Setting, in the School District during the 2012-2013 school year pending the approval of the Drexel Institutional Review Board.

All research conducted for this project involving students will follow the procedures outlined in the Educational Research Involving District Students Permission Form (#244), which was submitted to this office by Ms. Markey. Specifically, this approval is conditioned upon the parents' receiving a full and complete explanation of the project research and their providing express written permission to do so.

Ms. Markey is also permitted access to school district student records to determine student eligibility based on the criteria established for participation in the research study. Similarly, this permission is predicated upon Ms. Markey's obtaining of express written permission to access records as provided by the parent/guardian of each student participating in the research.

The District looks forward to continuing to work with Ms. Markey and the Drexel Institutional Review Board throughout this process.

Yours truly,

Ed.D., J.D.
Assistant Superintendent

Appendix E

Drexel University IRB Protocol Approval Letter

Drexel UNIVERSITY
Office of Human Research

APPROVAL OF PROTOCOL

January 8, 2013

Michel Miller, Ph.D.
School of Education
Mailstop: Drexel University

Dear Dr. Miller,

On January 8, 2013 the IRB reviewed the following protocol:

Type of Review:	Initial
Title:	Video Modeling Intervention for Students with Autism in the School Library Setting
Investigator:	Michel Miller, Ph.D.
IRB ID:	1212001745
Funding:	Internal
Grant Title:	None
Grant ID:	None
IND, IDE or HDE:	None
Documents Reviewed:	Application Form, Data Collection tools, Invitation, Permission Form, Assent Form Permission Letter and Proposal

According to 45 CFR 46, 101(b) (1)), the IRB approved the protocol on January 8, 2013. The protocol is approved Exempt Category 1, this study will enroll 5 subjects from the Lower Merion School District to complete various activities.

Risks to Children: 45 CFR 46.404 – Minimal Risk

In conducting this protocol you are required to follow the requirements listed in the INVESTIGATOR MANUAL.

Sincerely,

Danyelle S. Gibson

1601 Cherry Street, 3 Parkway Building, Suite 10444, Philadelphia, PA 19102 | Tel: 215.255.7857 | Fax: 215.255.7874
research.drexel.edu/compliance | orre@drexel.edu

Appendix F

Parent Permission Consent Form for Peer Filming Participation

Mr. and Mrs. John Doe
Xxx Montgomery Avenue
Springfield, PA 19000

July 1, 2012

Dear Mr. and Mrs. Doe:

I would like to request permission to film your daughter, Susie Doe, performing an academic task in the school library. I am creating a video that will be used in a research study, which I am conducting as part of my doctoral studies at Drexel University, School of Education – Goodwin College. I currently work at the school librarian at XXX Middle School and have known Susie for two years.

Information

I would like to create a video showing Susie demonstrating the step-by-step process involved in searching for a library book using our electronic card catalog. I am investigating the effect watching a video of another student performing an academic task will have on selected students' ability to perform that task. I am also investigating the use of video modeling resources to enhance instruction and to improve teaching effectiveness to benefit overall student achievement.

Risks

There should be little or no risk to Susie in filming this task, one that is part of our library skills curriculum. Susie will appear on camera and may be known to the students viewing this video. However, the video will only be shown to 5 students participating in the study and will not be available to others in the school. The time to complete the video should be less than one or two class periods and would be scheduled during Susie 's free periods (lunch, before school, homeroom, after school) and at her convenience. I will be more than happy to provide you with a copy of this video when completed.

Participation

Susie's participation in the filming of this video is completely voluntary. If you give your permission for her participation, and she agrees to do so, she may withdraw from the filming process at any time without any penalties or negative consequences.

Contact

Please feel free to contact me with any concerns or questions you may have about this request. Patricia T. Markey, Librarian and Research Investigator, XXX Middle School, xxx Tower Lane, Springfield, PA, 19000, 610-658-1000 or markeyp@xxxx.org.

If you feel you or Susie have not been treated according to the descriptions in this form, or her rights as a participant in research have been violated during the course of this project, you may contact the office for the Drexel University, Office of Regulatory Research Compliance, 1601 Cherry Street, 3 Parkview Bldg., Mail Stop 10-444, Philadelphia, PA 19102 or research@drexel.edu.

Consent

If you feel that you are comfortable in granting permission for Susie to assist in this video, please sign this form and return it in the enclosed envelope at your earliest convenience.

I agree to allow my child, _____, to take part in this study.

Parent's signature_____

Date _____

Appendix G

Task Analysis Observation Form

Video Modeling Intervention Instructional Strategy Observation Instrument

PROGRAM LOCATION:	OBSERVATION #:	DATE:	START TIME:	END TIME:
NAME OF OBSERVER:			TITLE:	
PARTICIPANT ID#:			GRADE LEVEL:	

Task Analysis Data Collection					
	Steps Completed:		Prompt Needed:	Search Type:	Check all that apply:
1.	Log onto school computer by entering your Student number and password			Book Title	
2.	Open Internet using "Firefox" Internet connection			Book Author	
3.	On school district homepage click on "Library Pages" link			Subject	
4.	Log onto Library Pages by entering your Student number and password			Keyword	
5.	Click on Destiny Library card catalog link			Personal Interest	
6.	Click on link for your school				
7.	*Type name of book in search box*				
8.	*Click on box with T (search titles)*				
9.	Find book you want on the search results screen				
10.	Click on book title for more information about book				
11.	Make sure a copy is available – check info on right side of box – "1 of 1 available"			**Prompt Level Key** FP = full physical PP = partial physical M = model G = gesture PV = partial verbal FV = full verbal	
12.	Write down the call number of the book or print out book record				
13.	Ask librarian to help you find the book on the shelf				
	* #7 and #8 can be repeated using keyword, subject or author search				
	Total:				

Comments/Notes:

_____

_____

_____

_____

Appendix H

Fieldnotes/Reflections Form

Video Modeling Intervention Instructional Strategy

PROGRAM LOCATION:	FIELDNOTE NUMBER:	DATE:	START TIME:	END TIME:
NAME OF OBSERVER:			ROLE:	
LOCATION OF ACTIVITY:			ACTIVITY NAME:	
INDIVIDUALS PRESENT:				

DESCRIPTION:	INTERPRETATION:	NOTATIONS/ CODING:

Appendix I

Student Questionnaire

Please read each sentence carefully and circle the number that best describes your response. Use the scale listed below each statement to determine how it reflects your opinion.

1. **Watching the video helped me learn how to search for a book on the computer by myself.**

1	2	3	4
Strongly disagree	Disagree	Agree	Strongly agree

2. **Knowing how to use the library card catalog will help me find information for my school projects.**

1	2	3	4
Strongly disagree	Disagree	Agree	Strongly agree

3. **Knowing how to use the library card catalog will help me find books that I am interested in reading just for fun.**

1	2	3	4
Strongly disagree	Disagree	Agree	Strongly agree

4. **I will probably use the library card catalog again to find books when I want information on a topic.**

1	2	3	4
Strongly disagree	Disagree	Agree	Strongly agree

5. **I enjoyed learning how to use the library card catalog.**

1	2	3	4
Strongly disagree	Disagree	Agree	Strongly agree

6. **I will suggest using the library card catalog to my friends when they need to find a book.**

1	2	3	4
Strongly disagree	Disagree	Agree	Strongly agree

Please share any other opinions you have about learning how to use the library card catalog. You may write your comments below or ask an adult to help you complete this section.

Thank you for your time and participation in this project.

Appendix J

Sample Book Search: Top Twenty Titles

	Title:	**Author:**	**Keyword/subject:**
	The Hunger Games	Collins, Susan	survival/contests
	Heat	Lupica, Mike	baseball
	Point Blank	Horowitz, Anthony	spies
	Eragon	Paolini, Christopher	dragons
	The Lightening Thief	Riordan, Rick	Gods and mythology
	Forge	Anderson, Laurie Halse	African Americans, soldiers, slavery
	Diary of a Wimpy Kid	Kinney, Jeff	families
	Harry Potter and the Sorcerer's Stone	Rowling, J. K.	wizards
	Mister Monday	Nix, Garth	heroes
	Schooled	Korman, Gordon	middle school
	Holes	Sachar, Louis	buried treasure
	The City of Ember	DuPrau, Jeanne	messengers good and evil
	Redwall	Jacques, Brian	animals
	Hatchet	Paulsen, Gary	survival
	Found	Haddix, Margaret Peterson	time travel
	Travel Team	Lupica, Mike	basketball
	The Graveyard Book	Gaiman, Neil	ghosts
	Fire and Ice	Hunter, Erin	warrior cats
	Truce	Murphy, Jim	war
	The Stinky Cheeseman	Scieszka, Jon	fairytales

Subject Activity Log and Intervention Session Documentation

3BUTV6C - Tommy

	Date	Time	Video ID#	Minutes	TRANS	STEPS	INDEP	PROMPT	Activity/Comments
1	1/25/13	10:30-10:40	N/A	10.0	Y	N/A	N/A	N/A	Permission Documentation
2	1/25/13	10:30-10:40	N/A	5.0	Y	N/A	N/A	N/A	Technology Observation/Documentation
3	3/4/13	11:57-12:09	VID00058	12.44	Y	2	0	5	Baseline A
4	3/6/13	11:25-11:45	VID00063	16.51	Y	11	4	15	Intervention B #1
5	3/11/13	10:25-10:50	VID00067	12.46	Y	12	6	17	Behavioral Issues – spoke to Special Educ. Team to determine best way to proceed
6	3/12/13	8:50-9:01	VID00068	11.52	Y	11	8	4	Will use terms "safe hands" and "quite body"
7	3/14/13	1:48-2:00	VID00076	17.28	Y	12	9	9	Tommy promised computer time reward for good behavior
8	3/18/13	9:22-9:42	VID00079	19.48	Y	12	9	7	Shows understanding of process
9	3/20/13	9:20-9:40	VID00085	14.37	Y	12	8	5	Tommy told Aide that he was excited to be working with CI
10	3/22/13	9:30-9:50	VID00087	16.23	Y	12	11	1	Withdrawal A – narrates his activities as he goes through each step
11	4/2/13	1:03-1:20	VID00092	15.43	Y	12	10	4	Withdrawal A – Tommy definitely likes looking up call #s and writing them down – and finding books on shelves!
12	4/3/13	1:05-1:20	VID00094	15.08	Y	12	9	3	Withdrawal A + Last session was supposed to be final one, however, Tommy begged to come to Library to work with CI – this is **final formal session**. Tommy continues to visit.
	Total:			165.8					CI = Co-Investigator

Note: TRANS=Transcription of treatment session completed, STEPS=number of steps completed, INDEP= number of steps achieved independently, PROMPT=number of prompts given during treatment session.

Subject Activity Log and
Intervention Session Documentation

04DORH7B - Nick

	Date	Time	Video ID#	Minutes	TRANS	STEPS	INDEP	PROMPT	Activity/Comments
1	2/10/13	N/A	N/A	10.0	Y	N/A	N/A	N/A	Permission Documentation
2	2/11/13	8:35-9:14	N/A	39.0	Y	N/A	N/A	N/A	Technology Observation
3	2/12/13	2:35-2:45	VID00040	5.26	Y	8	7	1	Baseline A
4	2/20/13	12:05-12:14	VID00046	8.33	Y	12	12	0	Intervention B#1. Narrated each step as he completed tasks
5	3/8/13	2:35-2:43	VID00065	7.59	Y	12	10	4	Needed some gestural prompting
6	3/21/13	2:35-2:45	VID00091	10.04	Y	11	10	1	Withdrawal A. **Final session.**
	Total:			80.22					

Note: TRANS=Transcription of treatment session completed, STEPS=number of steps completed, INDEP= number of steps achieved independently, PROMPT=number of prompts given during treatment session.

Subject Activity Log and
Intervention Session Documentation

2BUTJ6C - Amanda									
	Date	**Time**	**Video ID#**	**Minutes**	**TRANS**	**STEPS**	**INDEP**	**PROMPT**	**Activity/Comments**
1	1/26/13	N/A	N/A	10.0	Y	N/A	N/A	N/A	Permission Documentation
2	2/6/13	9:20-10:00	N/A	40.0	Y	N/A	N/A	N/A	Technology Observation
3	2/11/13	11:50-12:03	VID0029	12.49	Y	8	8	0	Baseline A
4	3/4/13	11:35-11:50	VID0056	15.05	Y	12	7	8	Intervention B #1
5	3/12/13	8:51-9:05	VID00069	11.55	Y	12	6	7	Found book and did "Victory Dance" – very happy with her accomplishment.
6	3/14/13	1:54-2:08	VID00077	14.28	Y	12	9	4	Seemed to really enjoy session.
7	3/18/13	11:35-11:52	VID0083	13.44	Y	12	10	3	Not completely transcribed due to audio problems with video. Prompts manually counted and data verified by fieldnotes.
8	3/20/13	11:38-11:49	VID0088	10.23	Y	12	10	2	Withdrawal A.
9	3/21/13	11:40-11:52	VID0090	11.41	Y	12	11	1	Withdrawal A. **Final session.**
			Total:	138.45					

Note: TRANS=Transcription of treatment session completed, STEPS=number of steps completed, INDEP= number of steps achieved independently, PROMPT=number of prompts given during treatment session.

Subject Activity Log and
Intervention Session Documentation

12SCOH6B - Henry									
	Date	**Time**	**Video ID#**	**Minutes**	**TRANS**	**STEPS**	**INDEP**	**PROMPT**	**Activity/Comments**
1	1/24/13	12:30-12:40	N/A	10.0	Y	N/A	N/A	N/A	Permission Documentation
2	1/27/13	12:40-12:45	N/A	5	Y	N/A	N/A	N/A	Technology Observation/Documentation
3	2/11/13	10:12-10:25	VID0025	9.27	Y	4	2	3	Baseline A
4	2/13/13	10:10-10:25	VID0027	16.40	Y	3	2	2	Intervention B #1, very distracted and played with computer keys
5	2/20/13	10:20-10:40	VID0044	16.36	Y	8	4	13	Fascinated with numbers, mumbles then under his breath, needed full verbal prompt to do tasks
6	2/27/13	10:30-10:42	VID0060	11.28	Y	8	4	6	Student "scripting"(repeating words as video model speaks)
7	3/4/13	8:50-9:02	VID0070	13.45	Y	7	4	5	Student declined to enter search terms, session ended
8	3/12/13	9:30-9:48	VID0074	17.31	Y	8	3	10	Student came with timer and reward tokens, ? Dewey Decimal numbers, show him non-fiction?
9	3/13/13	10:12-10:22	VID0075	9.44	Y	11	7	6	Token awards helping with distractible behavior issues.
10	3/14/13	11:35-12:00	VID0081	16.30	Y	12	8	8	Less distracted than last time, narrates his steps as he does them
11	3/18/13	10:10-10:28	VID0084	14.54	Y	12	9	5	Scripting both video and CI's words
12	3/19/13	9:35-10:05	VID0093	18.21	Y	12	10	2	Sat at table with laptop and was less distracted, borrowed books he found-a first
13	4/2/13	1:23-1:45	VID0095	9.53	Y	12	8	7	Little verbal communication, scripting, answered Yes to every question
14	4/4/13	10:10-10:28	VID0054	10.52	Y	12	10	3	Withdrawal A. **Final session.**
			Total:	177.61					

Note: TRANS=Transcription of treatment session completed, STEPS=number of steps completed, INDEP= number of steps achieved independently, PROMPT=number of prompts given during treatment session.

Subject Activity Log and
Intervention Session Documentation

03BUTV6C - Zoey									
	Date	**Time**	**Video ID#**	**Minutes**	**TRANS**	**STEPS**	**INDEP**	**PROMPT**	**Activity/Comments**
1	1/25/13	10:30-10:40	N/A	10.0	Y	N/A	N/A	N/A	Permission Documentation
2	2/6/13	8:35-9:14	N/A	39.0	Y	N/A	N/A	N/A	Technology Observation
3	2/12/13	2:07-2:21	VID0026	13.37	Y	3	3	0	Baseline A
4	2/13/13	1:54-2:14	VID0038	20.57	Y	12	10	2	Intervention B #1
5	2/22/13	9:30-9:50	VID0047	10.14	Y	3	3	0	Session ended early because Internet unavailable for access to card catalog.
6	2/25/13	1:23-1:45	VID0051	15.22	Y	12	8	7	Followed steps in video without prompting
7	3/4/13	9:04-9:18	VID0061	10.34	Y	12	10	2	Searched for books on shelves with call #s she had written down
8	3/8/13	10:12-10:25	VID0066	14.12	Y	12	10	6	Does not ask for help, when needed, but looks around with "lost" look on face
9	3/13/13	2:00-2:15	VID0072	13.25	Y	12	10	5	Combined with VID0071, all one session.
10	3/15/13	10:50-11:00	VID0078	5.09	Y	12	12	0	Worked quietly; did not need any prompting
11	3/20/13	9:40-9:48	VID0086	6.24	Y	12	10	3	Withdrawal A, all activities were completed in 8 minutes including finding and checking out book!
12	3/21/13	9:40-9:45	VID0089	6.01	Y	12	12	0	Withdrawal A, browsed fiction area on her own until she located book she wanted to borrow. **Final session.**
			Total:	163.35					

Note: TRANS=Transcription of treatment session completed, STEPS=number of steps completed, INDEP= number of steps achieved independently, PROMPT=number of prompts given during treatment session.

Appendix L
Research Codebook

Codebook: Introducing an Information Seeking Skill in a School Library to Students with Autism: Using Video Modeling and Least-to-Most Prompts

	Code	Definition:	Example:
1.	**BEH**	Behavior: including but not limited to communication, social interaction, and manneristic behaviors.	Distractions Self-regulation Risk Taking Confidence Building Learning Strategies Enjoyment of Activity: Participant responses to successful search: • "Victory Dance" after finding book • "I found it! I found it!" • "Alrighty!"
2.	**COL**	Collaboration: Any collective action in which two or more individuals work together towards a common goal of planning, implementing, or evaluating a specific aspect of an educational program for a student or group of students	• Avoiding scheduling conflicts (Amanda) • Use of common words/phrases: "safe hands", "quiet body" (Tommy) • Reward system (Henry)
3.	**CIS**	Consultation/Information Seeking: Process through which a professional assists or interacts with other professionals and the families of students with disabilities in order to acquire information that facilitates the learning of such students.	• Understanding Special Education terminology and testing information (e.g., IEPs) • Guidance on instructional strategies for students with ASD
4.	**CS**	Content Scaffolding: Instructional strategy in which educators teach material that is not too difficult or unfamiliar to students learning a new skill.	Card Catalog Search by: • Use of Top Twenty Book List • selecting book titles and topics of personal interest • Using search skills to locate resources for class assignments

5.	**CUR**	Curriculum: Any of a variety of resources, items, or tools, including textbooks, supplemental materials, and activities, used by teachers to engage students in the learning process. The body of courses and other formally established learning experiences, which constitute a program of study. • Class Assignments: Searches initiated because participant needed book or information for class assignment • Library Skills/Information Skills/ Information Literacy: Both formal and informal lessons to help library users become more proficient in seeking and locating information and resources.	Searches: • U.S. Civil War (Social Studies) • Fantasy, Easy biography, Science Fiction • Free choice fiction book (Language Arts)